

TIMBER SALE MAP

SALE NAME: NOMAD

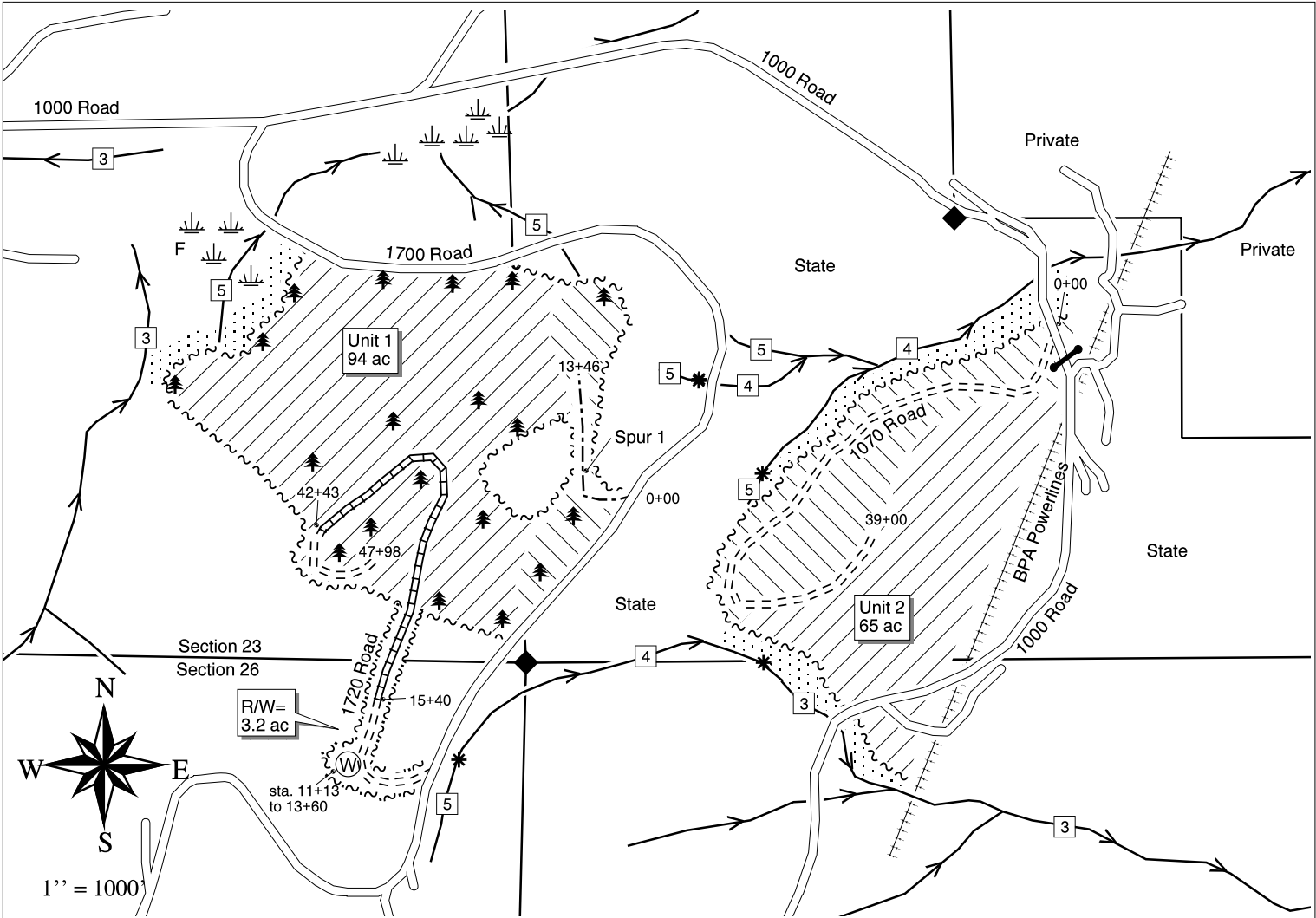
AGREEMENT NO: 30-077659

TRUST(S): COMMON SCHOOL, C.E.P. & R.I.

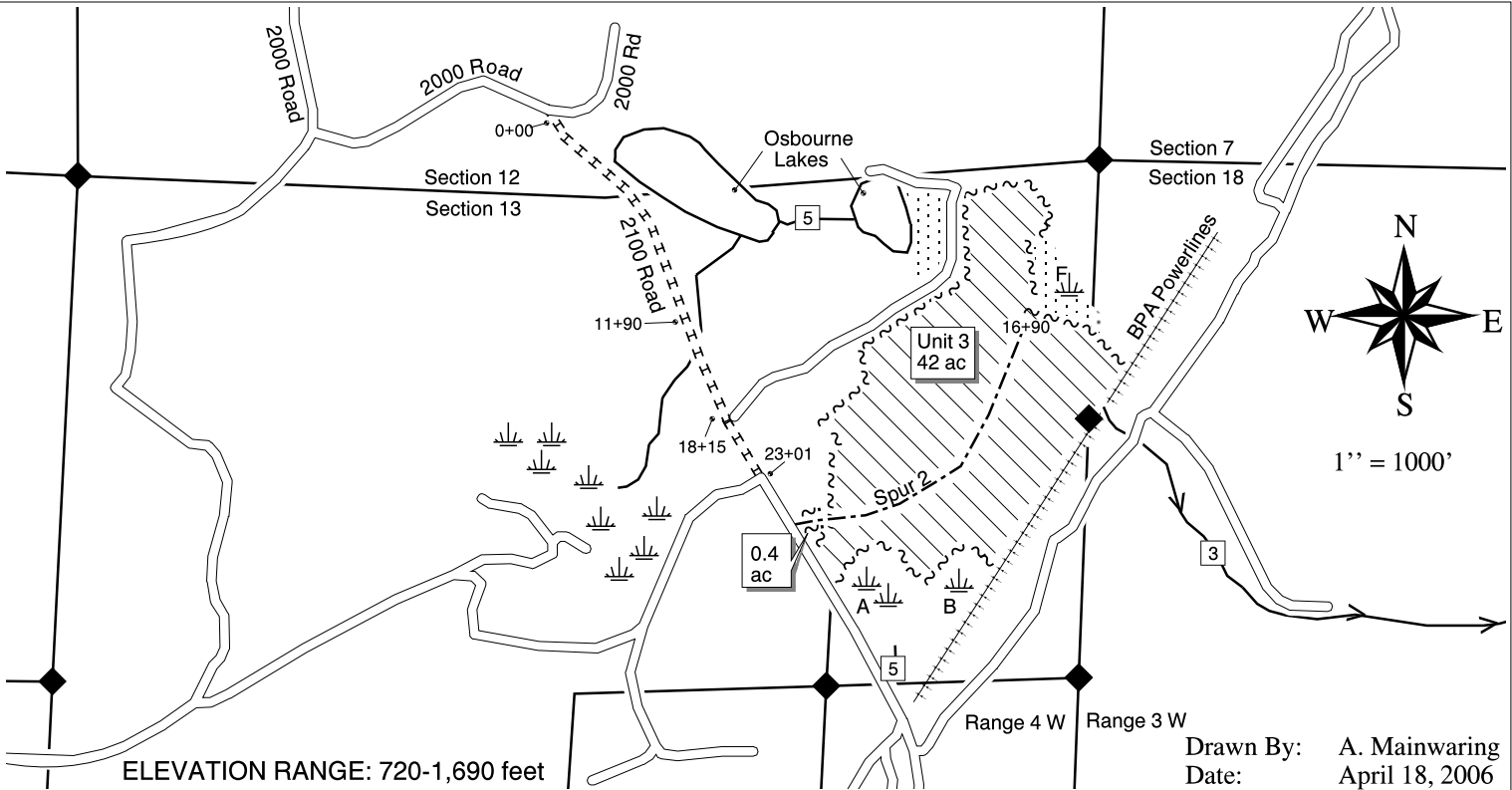
REGION: SOUTH PUGET SOUND

COUNTY(S): MASON

ROAD PLAN PROJECT
MAP 1 OF 2
TOWNSHIP 23 NORTH, RANGE 3 & 4 WEST, W.M.
UNITS 1 & 2



UNIT 3

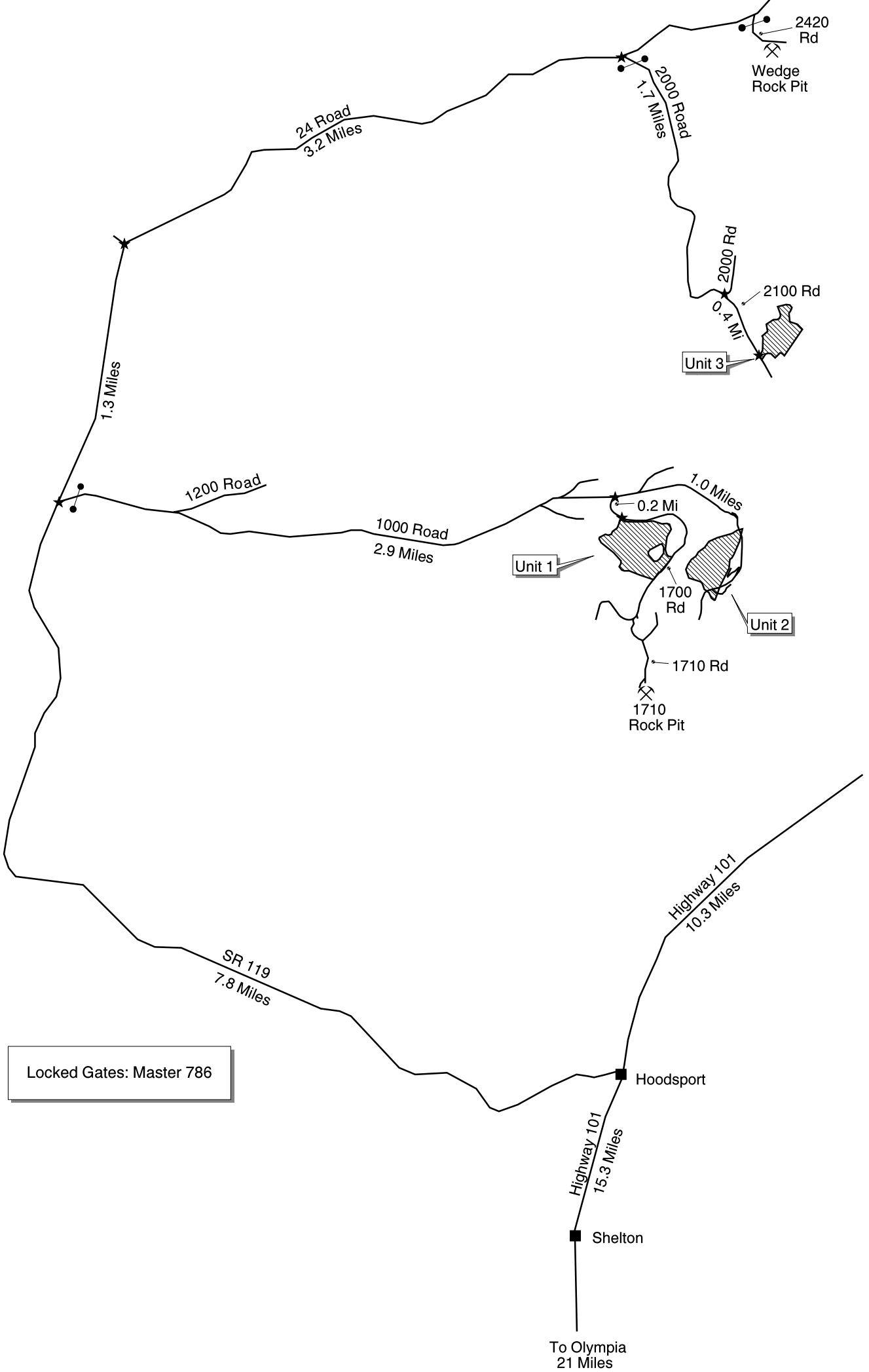


~~~~~	White Timber Sale Boundary Tags	=====	Existing Road		Wetlands
~~~~~	Orange Right of Way Boundary Tags	=====	Required Construction		Waste Area
	Leave Trees marked with Yellow Leave Tree Area Tags	-----	Optional Construction	*	Water Type Break
	Cable	=====	Required Construction with Endhaul		Water Type
	Ground Based	=====	Required Pre-haul Maintenance		Stream
	RMZ/WMZ	=====	BPA Powerlines		Survey Corner
					Locked Gate: Master 786

TIMBER SALE MAP

SALE NAME:	NOMAD	REGION:	SOUTH PUGET SOUND
AGREEMENT NO:	30-077659	COUNTY(S):	MASON
TRUST(S):	COMMON SCHOOL, C.E.P. & R.I.		

ROAD PLAN PROJECT
MAP 2 OF 2
VICINITY MAP
Not to Scale



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
SOUTH PUGET SOUND REGION

NOMAD
ROAD PLAN

SECTION 18, TOWNSHIP 23 NORTH, RANGE 03 WEST, W.M., SECTION 1, TOWNSHIP 23 NORTH,
RANGE 04 WEST, W.M.
& SECTIONS 13, 23, 24, 25 & 26, TOWNSHIP 24 NORTH, RANGE 04 WEST, W.M

MASON COUNTY
HOODSPORT UNIT

AGREEMENT NO.: 30-077659

STAFF ENGINEER: Heymann

DATE: 12/15/05

DRAWN & COMPILED BY: Heymann

SECTION 0 - SCOPE OF PROJECT

This project includes but is not limited to construction and optional construction including:

clearing;
grubbing;
right-of-way debris disposal;
excavation and/or embankment to subgrade;
landing construction;
acquisition and installation of drainage structures;
acquisition, manufacture, and application of rock;
grass seeding;
road deactivation;
road abandonment.

This project also includes but is not limited to pre-haul maintenance including:

acquisition and installation of drainage structures;
grading and shaping existing road surface and turnouts;
spot rocking.

SECTION 1 - GENERAL CLAUSES

1.1-1 ROAD PLAN SCOPE

Clauses in this plan apply to all construction or pre-haul maintenance including landings unless otherwise noted.

1.1-2 REQUIRED ROADS

Construction or pre-haul maintenance of the following roads is required. All roads shall be constructed or pre-haul maintained on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
2100	0+00 to 23+01	Pre-haul Maintenance
1720	0+00 to 47+98	Construction
1070	0+00 to 39+00	Construction

1.1-3 OPTIONAL ROADS

Construction of the following roads is not required. Roads used by the Purchaser shall be constructed on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
Spur 1	0+00 to 13+46	Construction

1.1-4 ROAD PLAN CHANGES

Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted in writing, to the Contract Administrator for consideration, submitted plans must be approved before construction begins.

1.1-5 HIDDEN CONDITIONS

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

1.2-1 CONSTRUCTION PERIOD

The construction, pre-haul maintenance or rock haul on any of the roads specified herein shall not be permitted when in the opinion of the Contract Administrator, excessive damage may occur, nor shall it be permitted from October 1 to April 30 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2-1C DAILY CONSTRUCTION TIME

No operation of road construction equipment will be allowed on weekends or State recognized holidays unless authority to do so is granted in writing by the Contract Administrator.

1.2-2 HAUL APPROVAL

Purchaser shall not use roads constructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator. Timber and rock hauling on the 24 Road, for Unit #3 only is not allowed on weekends not on holidays from Memorial Day to Labor Day.

1.2-3 EXCAVATOR CONSTRUCTION

The following road shall be constructed using track mounted hydraulic excavators unless otherwise authorized, in writing, by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
1720	15+00 to 43+31

1.2.1-1 CONSTRUCTION STEPS

Pioneering shall not extend 1000 feet beyond completed construction unless approved, in writing, by the Contract Administrator.

Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the clearing limits, or restrict drainage.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, culvert installations and subgrade compaction shall be completed and are subject to written approval by the Contract Administrator prior to rock application, and/or timber haul.

1.3-1A CLOSURE TO PREVENT ROAD DAMAGE

At any time of the year, the hauling of forest products shall not be permitted when in the opinion of the Contract Administrator excessive road damage may occur.

1.4-2 SLOPE STAKING

The following road shall be constructed in accordance with construction stakes.

<u>Road</u>	<u>Stations</u>
1720	15+40 to 42+43

1.4-3 **R P DAMAGE**

Construction stakes or Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1 **ROAD MAINTENANCE RESPONSIBILITY**

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

1.5-3 **SNOWPLOWING**

Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

SECTION 2 - CLEARING

2.1-1 **CLEARING SPECIFICATION**

Fell all vegetative material larger than 6 inches DBH or over 20 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

SECTION 3 - GRUBBING

3-1 **GRUBBING SPECIFICATIONS**

On the following roads all stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed.

<u>Road</u>	<u>Stations</u>
1720	0+00 to 47+98
1070	0+00 to 39+00

3-2 **GRUBBING LIMITS**

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1 **DEBRIS DEFINITION**

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume within the grubbing limits.

4.1-2 **DISPOSAL COMPLETION**

All right-of-way debris disposal shall be completed-prior to the application of rock and/or timber haul.

4.2.3-3 **DEBRIS PLACEMENT**

Right-of-way debris shall not be placed against standing timber.

4.2.3-4 **SCATTERING RIGHT OF WAY DEBRIS**

On the following roads, right-of-way debris shall be scattered outside the right-of-way clearing limits in natural openings.

<u>Road</u>	<u>Stations</u>
1720	0+00 to 47+98
1070	0+00 to 39+00

4.2.3-4A SCATTERING RIGHT OF WAY DEBRIS

On the following roads, Right-of-way debris shall be scattered outside the grubbing limits.

<u>Road</u>	<u>Stations</u>
Spur 1	0+00 to 13+46
Spur 2	0+00 to 16+90

SECTION 5 - EXCAVATION

5.1-1 DEFAULT ROAD DIMENSIONS

Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-3 ROAD GRADE AND ALIGNMENT

Road grade and alignment shall conform to the State's marked location. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are: 18 percent favorable and 12 percent adverse or as specified on drawings. Minimum radius curve is 60 feet.

5.1-4 CURVE WIDENING

Minimum extra widening on the inside of curves shall be:

5 feet extra	80 to 100 foot radius curve
7 feet extra	60 to 80 foot radius curve

Curve widening, where required, shall be added to the inside of curves.

5.1-7 CONSTRUCTION TOLERANCES

Roads shall be constructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8 CUT SLOPE RATIO

Excavation (cut) slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Percent</u>
Common Earth (on side slopes less than 55%).....	1:1	100
Common Earth (55% to 70% sideslopes)	¾:1	133
Common Earth (on slopes over 70%).....	½:1	200
Fractured or loose rock	½:1	200
Hardpan or solid rock.....	¼:1	400

5.1-9 SHAPING CUT SLOPE

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10 FILL WIDENING

Embankments shall be widened as follows:

<u>Height at Shoulder</u>	<u>Subgrade Widening</u>
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11 FILL SLOPE RATIO

Embankment (fill) slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<u>Percent</u>
Common Earth and Rounded Gravel	1½:1	67
Angular Rock	1¼:1	80

5.1-12 **DISPOSAL OF ORGANIC DEBRIS**

Organic material shall be excluded from embankment.

5.1-14 **FULL BENCH CONSTRUCTION**

Where side slopes exceed 45 percent, full bench construction shall be utilized for the entire subgrade width.

5.1-15 **END HAUL CONSTRUCTION**

Waste material may be deposited adjacent to the road prism on side slopes up to 55 percent if the waste material is compacted. On side slopes of 55 percent or more, all excavation shall be end hauled or pushed to designated embankment sites. All waste embankments shall be compacted in horizontal layers not exceeding 2 feet.

5.1-16 **REQUIRED END HAUL LOCATIONS**

On the following road, full bench construction shall be utilized with all excess excavated material end hauled or pushed to designated waste areas.

End Haul/Waste Material Disposal

<u>Road</u>	<u>Stations</u>	<u>Waste Area Location</u>	<u>Remarks</u>
1720	15+40 to 42+43	11+13 to 13+69	Left side of road

5.1-16A **UNSUITABLE EMBANKMENT**

Excavated material, which is unsuitable for culvert backfill, shall be end-hauled to designated waste areas.

5.1-22 **PROHIBITED DISPOSAL AREAS**

Waste material shall not be deposited within 100 feet of a culvert installation, live stream, Riparian Management Zone, wetland or Wetland Management Zone.

5.1-23 **TURNOUTS**

Turnout locations noted on this plan are approximate. Locations shall be adjusted to fit with final subgrade alignment and sight distances. Location shall be subject to written approval of the Contract Administrator.

5.1-25 **TURNAROUNDS**

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.3-1 **FILL COMPACTION**

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-3 **SEEDING AND FERTILIZING CONSTRUCTION SLOPES**

On the following roads, Purchaser shall seed and fertilize all soils exposed by construction activities. Application rate shall be 50 pounds seed per acre and 200 pounds fertilizer per acre. Seed and fertilizer will be provided by the Purchaser.

<u>Road</u>	<u>Seed Specification</u>	<u>Fertilizer Specification</u>	<u>Stations</u>
1720	Pasture Mix	16-16-16	0+00 to 47+98
1070	Pasture Mix	16-16-16	0+00 to 39+00

5.5-4 **SUBGRADE COMPACTION**

Constructed subgrades shall be compacted full width except ditch prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 12,000 pounds. Three complete passes shall be made at a maximum operating speed of 3 mph.

5.5-5 **SUBGRADE CROWN**

Finished subgrade shall be crowned as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

SECTION 6 - DRAINAGE

6.1-2 BERM REMOVAL

Berms shall be removed from shoulders to permit escape of runoff.

6.2.1-1 CULVERT MATERIAL SPECIFICATION

Where permanent culverts are specified Purchaser shall furnish, install, and maintain corrugated polyethylene pipe (AASHTO specification No. M-294-S) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-1A TEMPORARY CULVERTS

Purchaser shall furnish, install and maintain temporary culverts of the length and diameter specified on the CULVERT LIST. Culverts may be new or used steel, plastic, concrete, or such other material as approved by the Contract Administrator. All said culverts shall be removed from the roadbed and State Land as indicated in clause 10.1-1.

6.2.1-2 CULVERT BANDS

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe.

6.2.1-5 REQUIRED CULVERTS STATE PROPERTY

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State.

6.2.1-5A CULVERT REMOVAL

Metal, concrete, or plastic culverts and bands removed from the roadbed shall be removed from State land prior to termination of this contract.

6.2.2.1-1 CULVERT SPECIFICATIONS

Culvert, downspout, flume, and energy dissipator installation shall be in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL.

6.2.2.3-1 CROSS DRAIN SKEW

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2 CULVERT SLOPE

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.5-1 ENERGY DISSIPATORS

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.3-1 DITCH CONSTRUCTION

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

6.4-1 CATCH BASINS

Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1 HEADWALLS

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts.

SECTION 7 - ROCK

7.1-1 ROCK SOURCES

Rock for construction under this contract may be obtained from sources on State land as listed below at no charge to the Purchaser. Development and use shall be in accordance with a written "Development Plan" prepared by the State. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use these rock sources, joint-operating plans shall be developed. All parties shall follow these plans.

<u>Source</u>	<u>Location</u>	<u>Type</u>
1710 Pit	SE¼ SE¼ Sec.26 T23N R04W	4 Inch In Place/Quarry Spalls
Wedge Pit	NE ¼ Sec 1 T23N R04W	4 Inch In Place

7.1-1C COMMERCIAL SOURCE

Rock for construction or pre-haul maintenance under this contract may be obtained from any commercial source as approved in writing by the Contract Administrator.

<u>Type</u>
3 Inch Minus

7.1-4 APPROVED ROCK SOURCES

All non-commercial pit operations shall be conducted as directed by the Contract Administrator.

7.2.1.1-6C
3 INCH MINUS ROCK

% equal to, or smaller in one dimension than the specified size.....	100%
% passing #4 square sieve	16%
% passing U.S. #200 sieve.....	7% Max.

All percentages are by weight.
The portion of ballast retained on ¼ inch sieve shall not contain more than 0.1 percent vegetative debris or trash.

7.2.1.1-7C
QUARRY SPALLS

% passing 8" square sieve.....	100%
% passing 3" square sieve	40% Max.
% passing ¾" square sieve.....	10% Max.

All percentages are by weight.
The portion of ballast retained on ¼ inch sieve shall not contain more than 0.1 percent vegetative debris or trash.

7.2.1.1-8 4 INCH IN PLACE

"4 INCH IN PLACE" rock shall have a minimum of 90 percent of the top 4 inches of the running surface pass a 4 inch square opening. In place processing such as grid rolling, jaw crushing, or such other method as is demonstrated by the Purchaser to be effective, shall be required if necessary to achieve this requirement.

7.2.1.2-2 DEBRIS IN ROCK

Manufactured rock shall contain no more than 5 percent by weight of vegetative debris, dirt, or trash.

7.2.4-1 **DRILLING AND SHOOTING SPECIFICATION**

Rock drilling and shooting shall meet the following specifications:

- a. Oversize material remaining in the rock source at the conclusion of the timber sale shall not exceed 5 percent of the total volume mined for the sale.
- b. Oversize material is defined as rock fragments larger than two feet in any dimension.
- c. The Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days prior to any drilling.

7.4.2-1 **MINIMUM ROCK**

Apply at least the minimum required rock quantity as shown on ROCK LIST. Required and optional rock shall meet the specifications on the ROCK LIST.

7.4.2-2 **SUBGRADE APPROVAL FOR ROCK**

Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-3C **GRADING**

On the following road, a grader shall be used to shape the existing surface prior to timber haul.

<u>Road</u>	<u>Stations</u>
2100	0+00 to 23+01

7.4.2-3D **GRADING AND SUBGRADE COMPACTION**

On the following roads, a grader shall be used to shape the subgrade prior to subgrade compaction.

<u>Road</u>	<u>Stations</u>
1720	0+00 to 47+98
1070	0+00 to 39+00

7.4.2-7 **ROCK FOR WIDENING**

Turnarounds, Turnouts, and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8 **ROCK SHAPING**

Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.2-9 **SPOT ROCK**

On the following road, Purchaser shall apply rock as directed by the Contract Administrator in accordance with quantities shown on ROCK LIST.

<u>Road</u>	<u>Stations</u>
2100	11+90 to 12+40
2100	18+15 to 19+15

7.4.3-2 **ROCK COMPACTION**

Rock shall be spread and compacted full width in lifts each not to exceed 12 inches uncompacted depth. Compaction shall be by smooth drum vibratory roller weighing at least 12,000 pounds. Three complete passes at a maximum speed of 3 mph shall be made on each lift.

SECTION 8 - STRUCTURES

8.4-8 **GATE CLOSURE**

During periods of hauling, Purchaser shall keep gates closed except for passing vehicles from October 1 to April 15. Gates shall be closed and locked when no operation is in progress.

SECTION 9 - ROAD AND LANDING DEACTIVATION

9.1-1 ROAD CLOSURE

The following road and all landings shall be deactivated by the Purchaser prior to the termination of this contract.

<u>Road</u>	<u>Stations</u>
1720	0+00 to 47+98

9.1-2

- Deactivation shall consist of:
- constructing drivable water bars in conformance with the attached DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 200 feet;
 - skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;
 - keying water bars into ditchline;
 - all work shall be completed as directed by the Contract Administrator.

9.2-1 LANDING DEBRIS

Purchaser shall reduce or relocate debris generated by road and landing construction, in a manner approved, in writing, by the Contract Administrator, to avoid landing failures and potential debris slides.

9.2-2 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface as approved by the Contract Administrator.

SECTION 10 - ROAD AND LANDING ABANDONMENT

10.1-1 ABANDONMENT

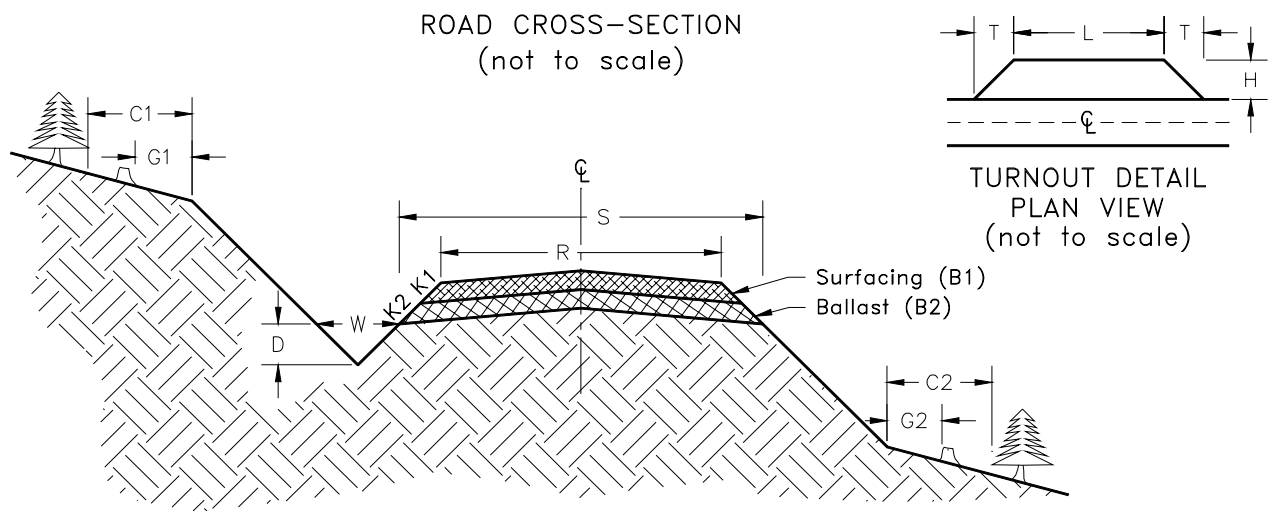
If constructed the following roads shall be abandoned by the Purchaser prior to the termination of this contract.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
Spur 1	0+00 to 13+46	Light
Spur 2	0+00 to 16+90	Light

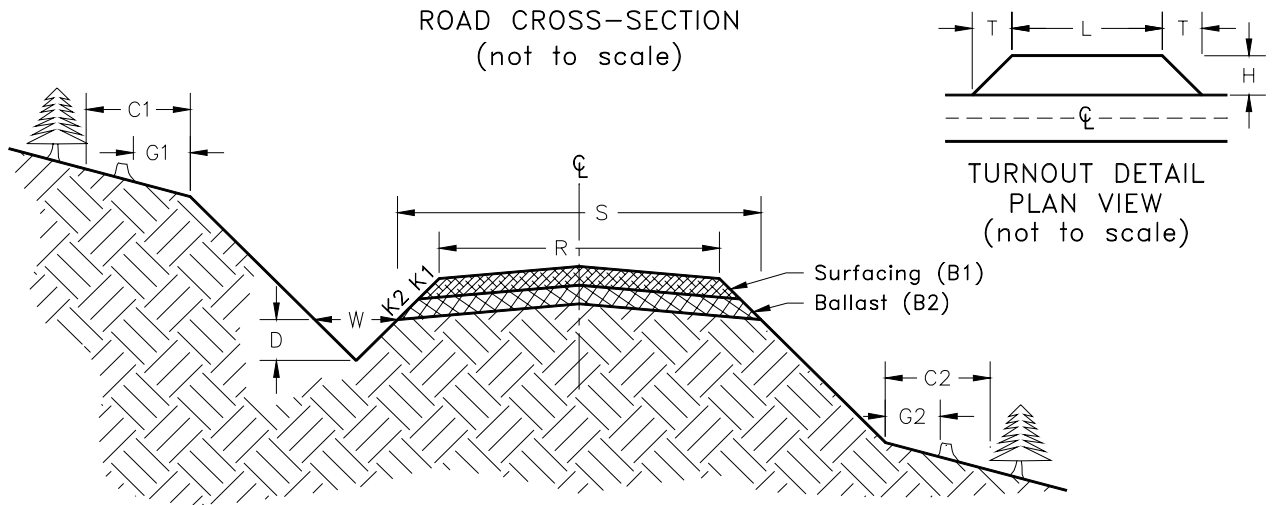
10.1-1A LIGHT ABANDONMENT

- Light Abandonment shall consist of:
- constructing non-drivable water bars in conformance with the attached NON-DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 200 feet;
 - skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;
 - keying water bars into ditchline;
 - construction of tank trap barrier in conformance with the attached SINGLE TANK TRAP DETAIL;
 - removing ditch cross drain culverts and leaving the resulting trench open;
 - sloping all trench walls and approach embankments no steeper than 1.5:1;
 - removing culverts from State Land;
 - grass seeding concurrently with abandonment and in accordance with Clause: 5.4-3;
 - all work shall be completed as directed by the Contract Administrator.

TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width (feet)	Road Width (feet)	Ditch		Crown in. @ CL	Grubbing Limits (feet)		Clearing Limits (feet)		Cut Slope Ratio	Fill Slope Ratio
						Width (feet)	Depth (feet)		G1	G2	C1	C2		
				S	R	W	D						%	%
2100	11+90	12+40	C	15	12	2	1	4						
2100	18+15	19+15	C	15	12	2	1	4						
1720	0+00	21+54	B	15	12	2.5	1	4	5	5	tags	tags	100	67
1720	21+54	47+98	B	15	12	2.5	1	4	5	5	7	7	100	67
1070	0+00	39+00	C	15	12	2.5	1	4	5	5	7	7	100	67
Spur 1	0+00	13+46	C	13	10	2	1	3	0	0	0	0	100	67
Spur 2	0+00	4+28	C	13	10	2	1	3	0	0	tags	tags	100	67
Spur 2	4+28	16+90	C	13	10	2	1	3	0	0	0	0	100	67



ROCK LIST BALLAST

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2				4 Inch In Place	L	H	T
2100	11+90	12+40	1½:1	12”	50	1.50	75	Wedge Pit	50	12	25
2100	18+15	19+15	1½:1	12”	50	1.00	50	Wedge Pit			
1720	0+00	47+98	1½:1	12”	50	47.98	2399	1710 Pit			
1070	0+00	39+00	1½:1	12”	50	39.00	1950	1710 Pit			
Spur 1	0+00	13+46	1½:1	12”	43	13.46	579	1710 Pit			
Spur 2	0+00	16+90	1½:1	12"	43	16.90	727	Wedge Pit			
				Optional Landing Rock			524	Wedge/1710 Pits			
				Culvert Inlet/Outlet			5	1710 Pit(Quarry Spalls)			

OPTIONAL ROCK 1830 Cubic Yards
 REQUIRED ROCK 4474 Cubic Yards
 BALLAST TOTAL 6304 Cubic Yards

*Optional Rock: If Purchaser elects to haul on optional rock roads in wet weather, the depth listed above is recommended but not required.

NOTE: Yardages are estimated on a compacted (In-Place) basis. Compliance of required rock will be based on compacted depth measurement.

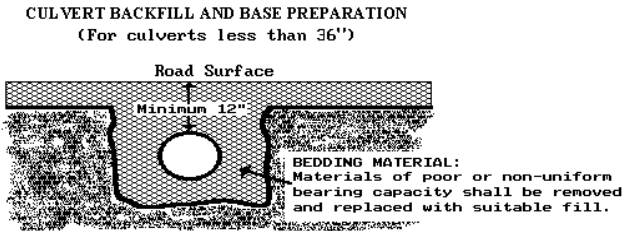
CULVERT LIST

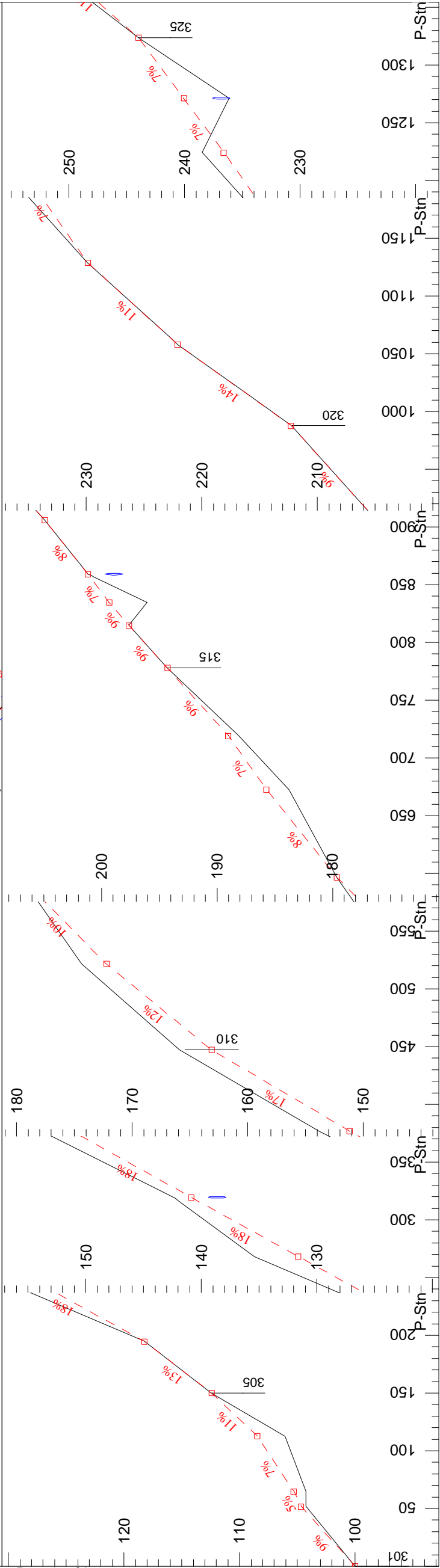
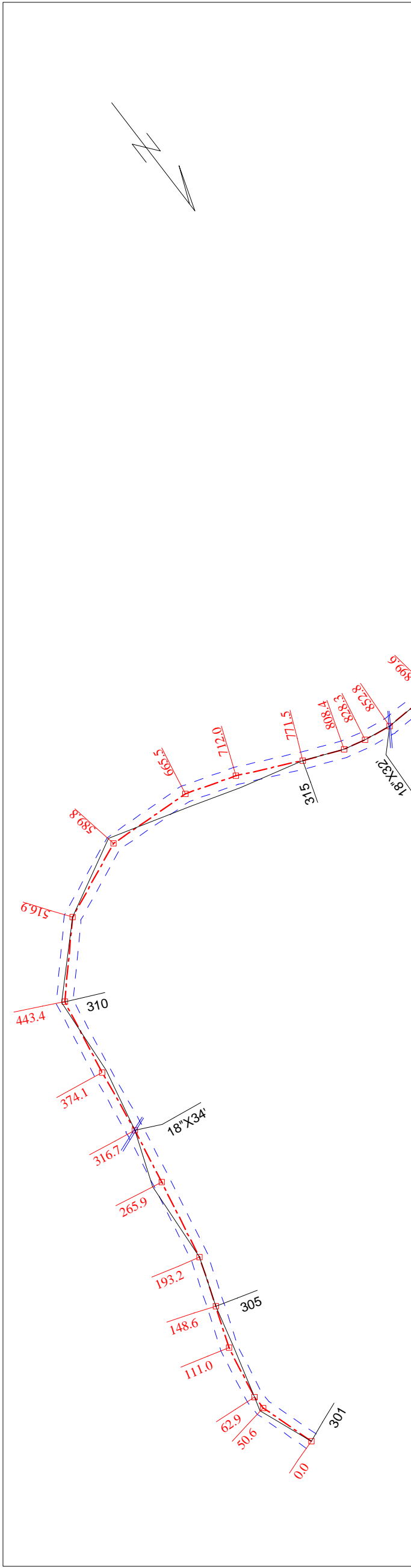
Road Number	Location	Culvert		Length (ft)			Riprap (C.Y.)			Remarks
		Dia.	Type	Culvert	Downspt	Flume	Inlet	Outlet	Type	
2100	12+90	18	PD	30			0.1	0.1	QS	Install across 1700 RD
2100	18+65	18	PD	30			0.1	0.1	QS	
1720	0+00	18	PD	34			0.1	0.1	QS	
1720	5+81	18	PD	34			0.1	0.1	QS	
1720	14+35	18	PD	30			0.1	0.1	QS	
1720	17+71	18	PD	30			0.1	0.1	QS	
1720	20+47	18	PD	30			0.1	0.1	QS	
1720	23+45	24	PD	32			0.1	0.1	QS	
1720	25+54	18	PD	30			0.1	0.1	QS	
1720	29+42	18	PD	30			0.1	0.1	QS	
1720	32+41	18	PD	34			0.1	0.1	QS	
1720	37+07	18	PD	30			0.1	0.1	QS	
1720	40+64	18	PD	30			0.1	0.1	QS	
1720	45+69	18	PD	28			0.1	0.1	QS	
1070	3+17	18	PD	34			0.1	0.1	QS	
1070	8+53	18	PD	32			0.1	0.1	QS	
1070	12+65	18	PD	30			0.1	0.1	QS	
1070	19+00	18	PD	34			0.1	0.1	QS	
1070	30+40	18	PD	32			0.1	0.1	QS	
1070	33+06	18	PD	34			0.1	0.1	QS	
1070	36+95	18	PD	32			0.1	0.1	QS	
Spur 1	0+75	18	TEMP	40						Install in ditch of 1700 RD
Spur 1	4+69	18	TEMP	30						
Spur 1	5+57	18	TEMP	30						
Spur 2	5+57	18	TEMP	30						
Spur 2	8+06	18	TEMP	28						
Spur 2	9+50	18	TEMP	28						

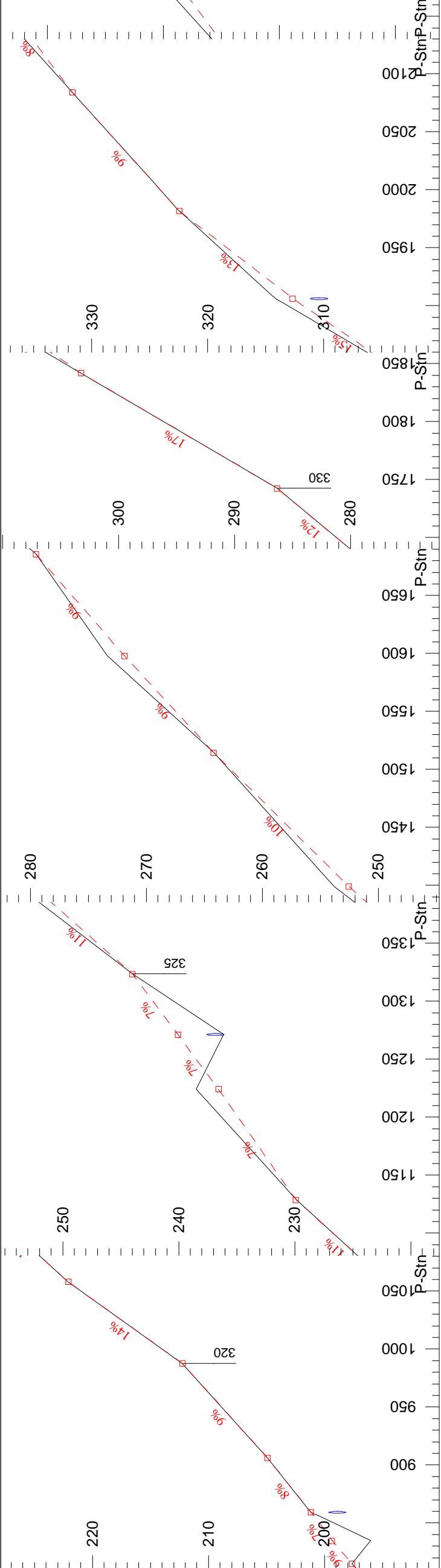
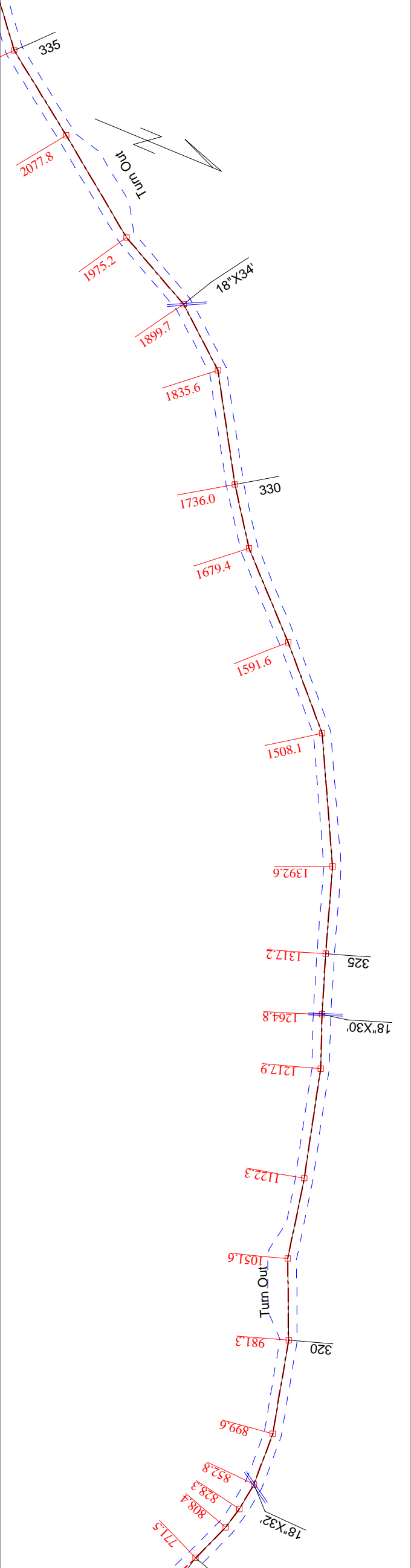
PD = Polyethylene Pipe Dual Wall AASHTO No. M294 Type S
GS16 = Galvanized Steel AASHTO No. M36, 16 Gauge
AS12 = Aluminized Steel AASHTO No. M274, 12 Gauge
TEMP = Temporary Culvert

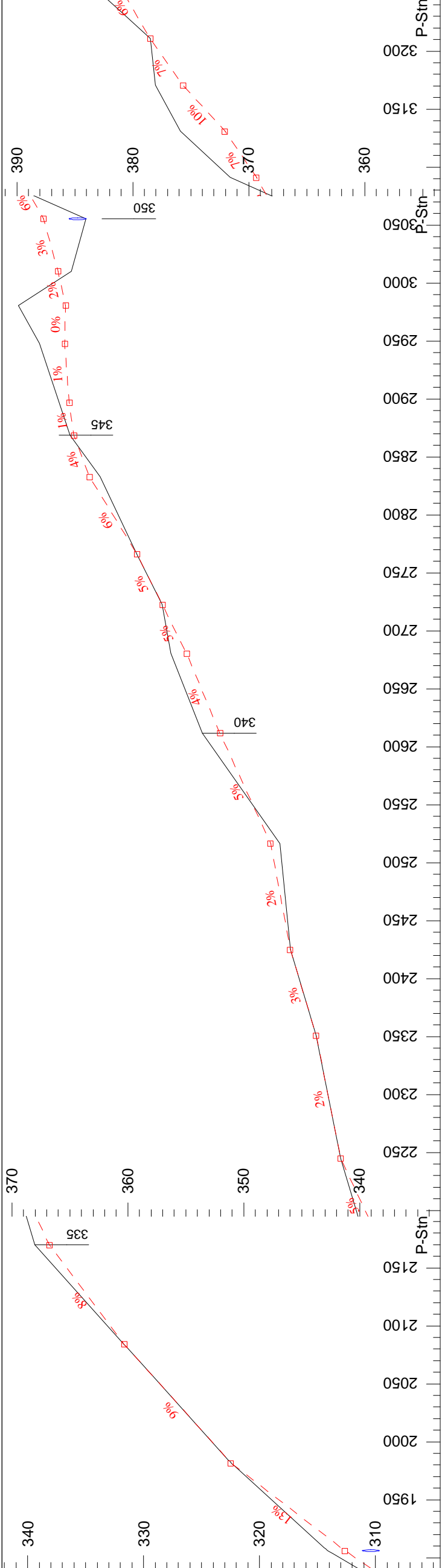
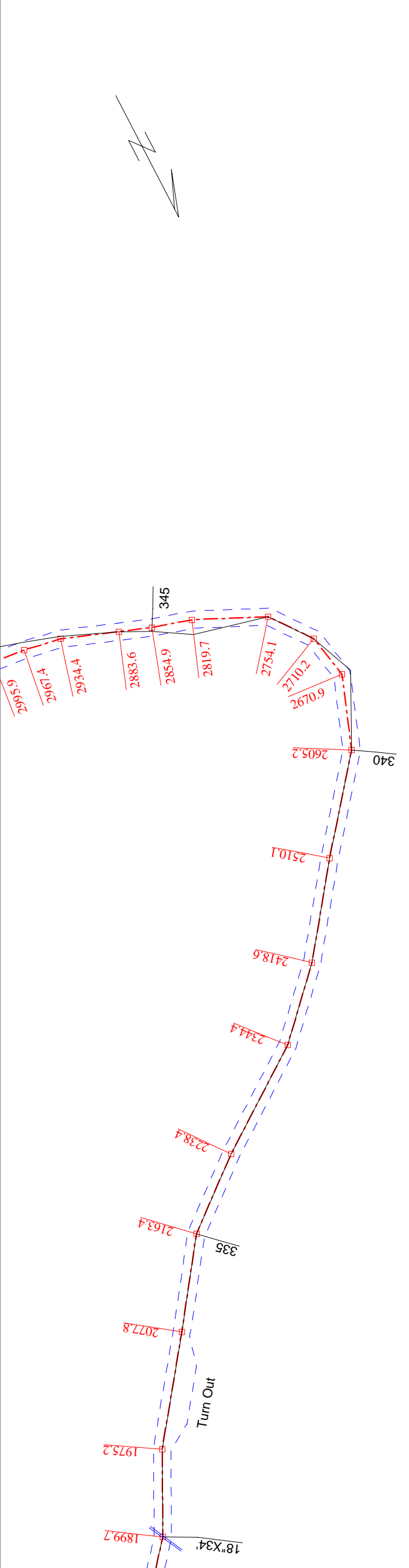
Key:

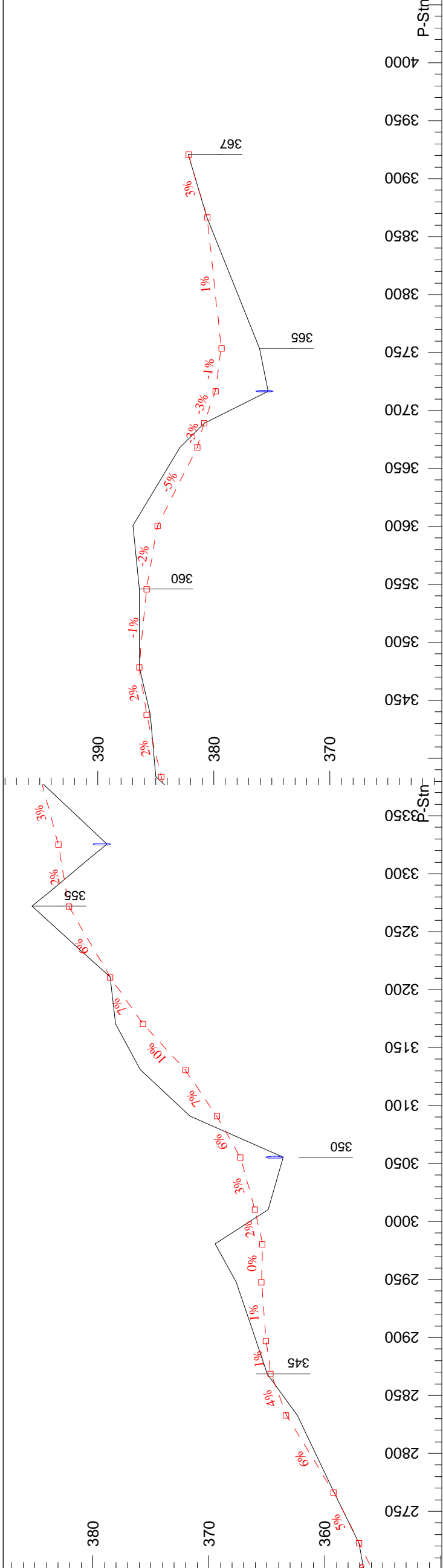
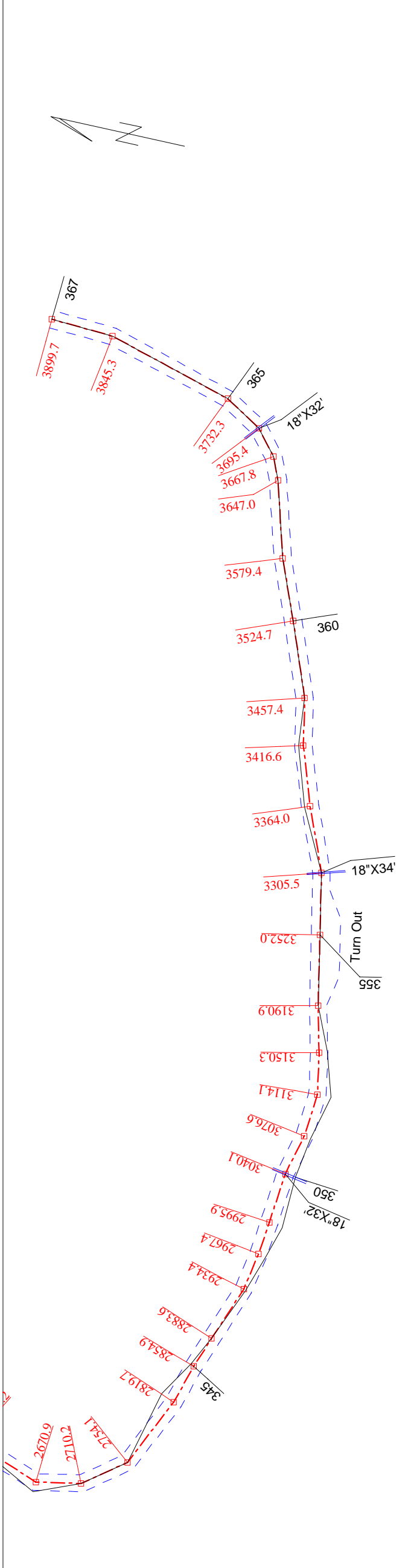
- QS - Quarry Spalls
- SR - Shot Rock
- NT - Native (bank run)
- SL - Select Fill
- HL - Heavy Loose Riprap
- LL - Light Loose Riprap
- Flume - Half round pipe
- Downspout - Full round pipe

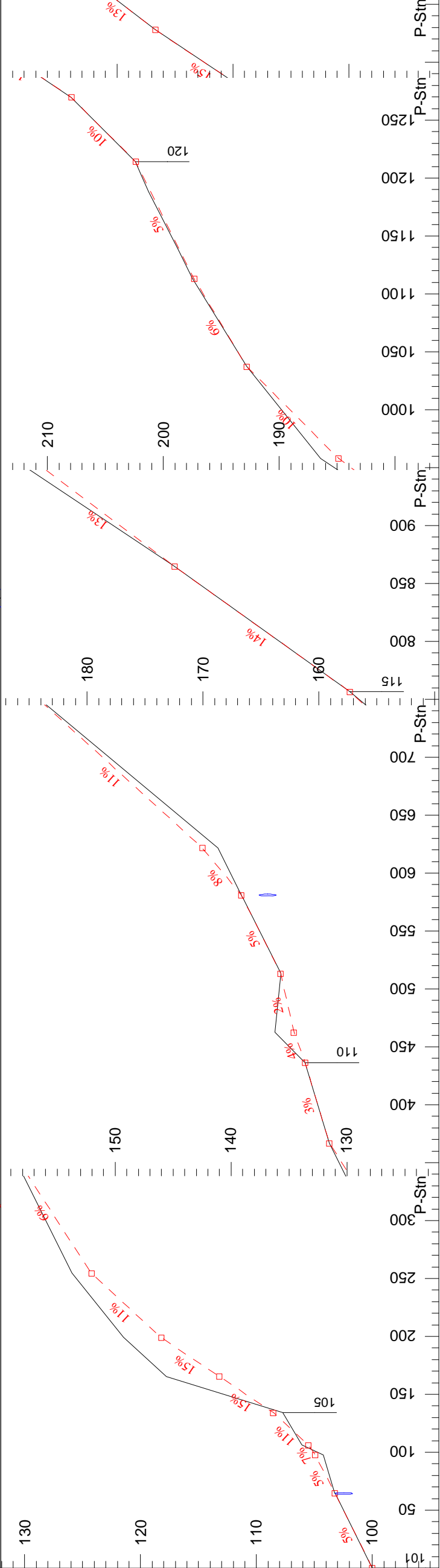
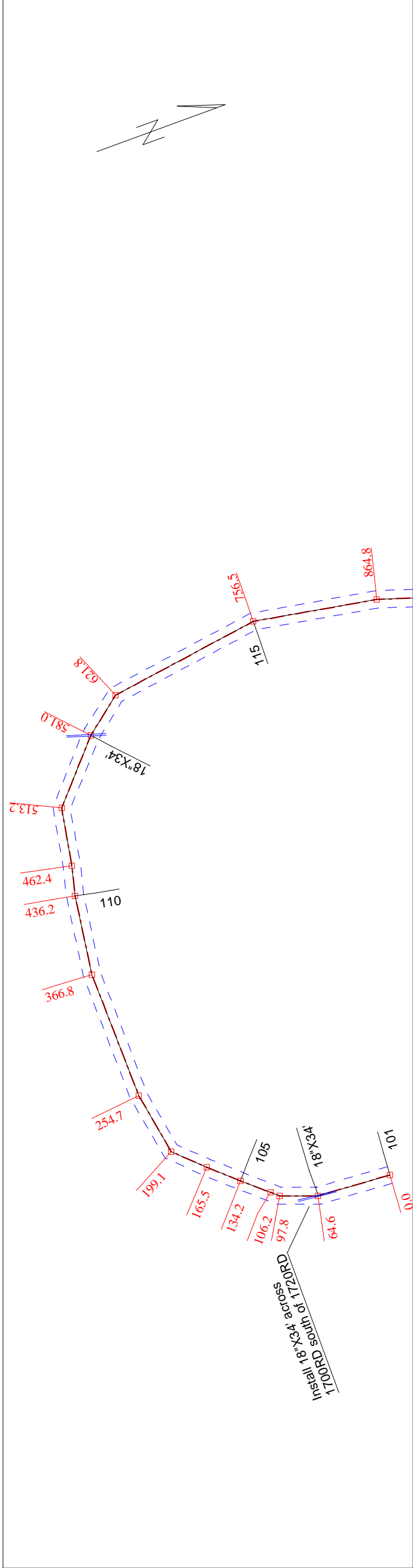










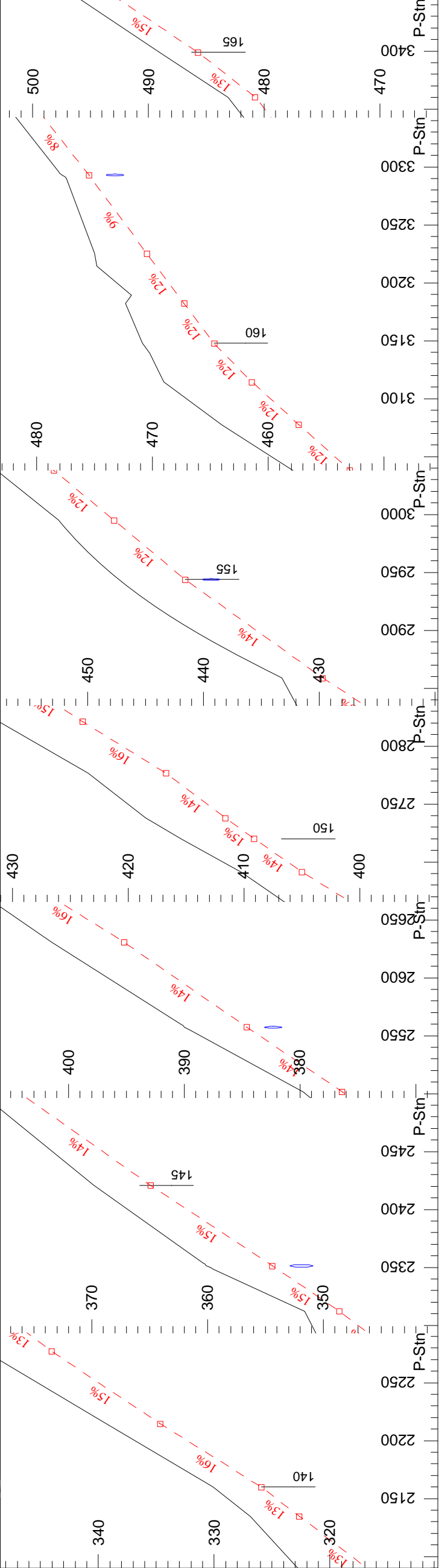
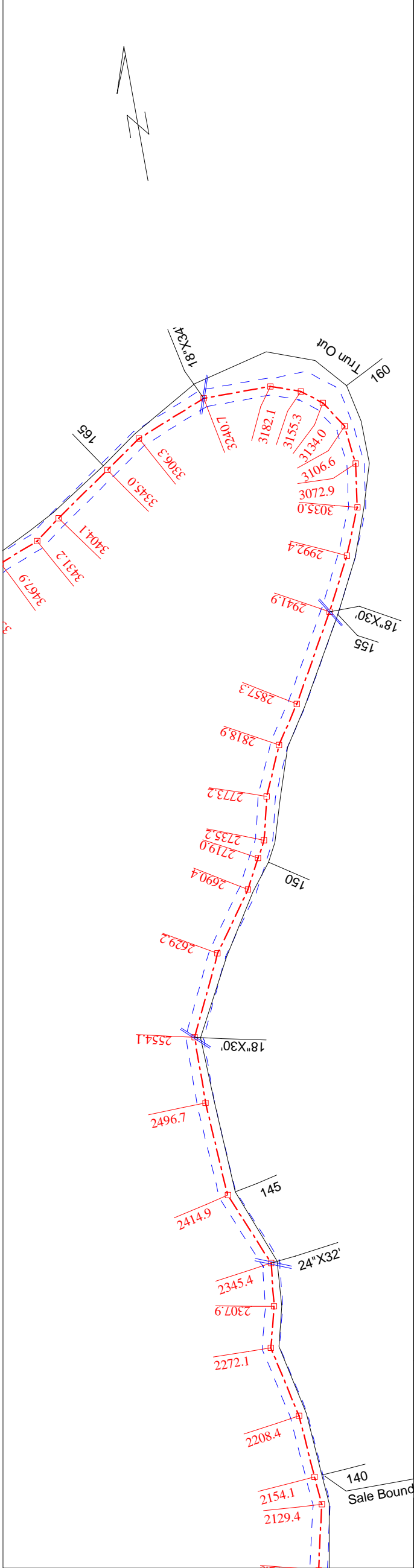


Nomad Timber Sale
1720 RD
Contract #: 30-077659

Washington State Department of Natural Resources
South Puget Sound Region

Plan Scale 1:1200
 Profile Vert Scale 1:120
 Profile Horz Scale 1:1200

Engineer: B. Heymann
05/12/07
Page 1 of 5

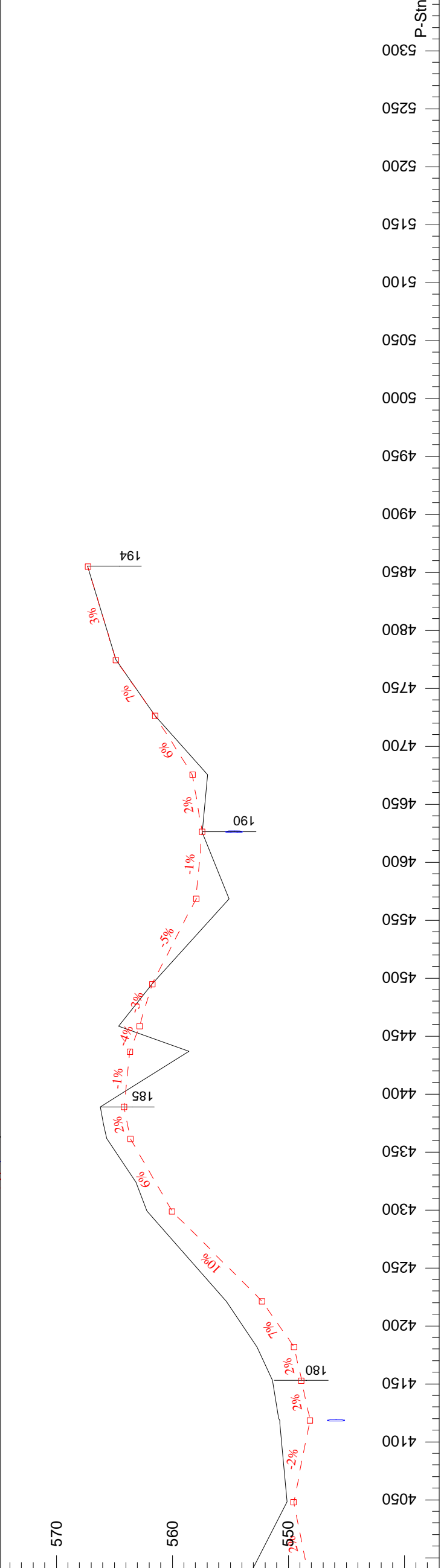
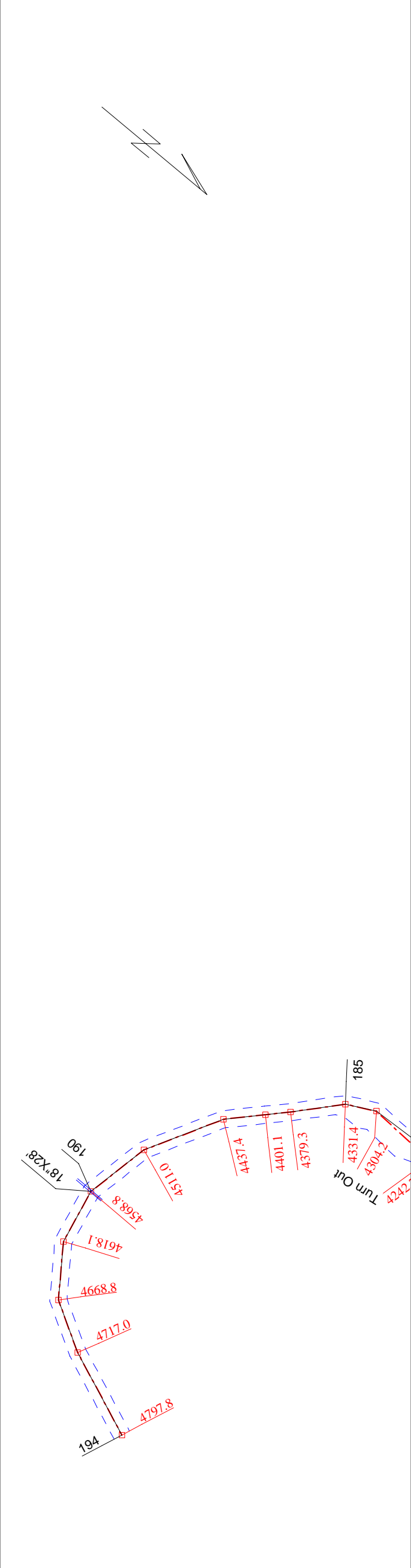


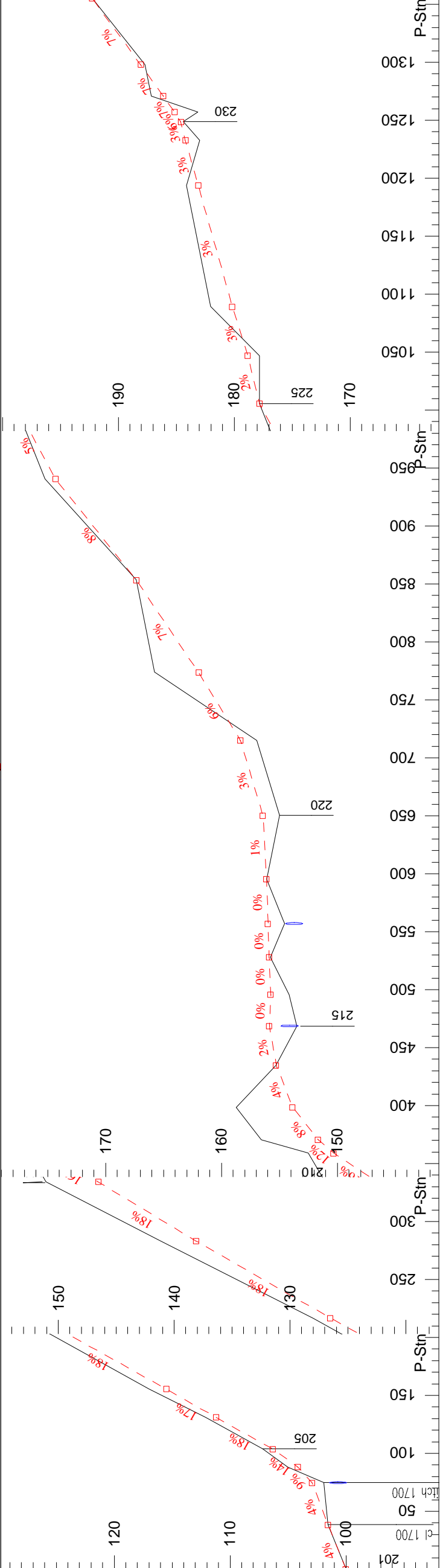
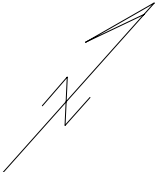
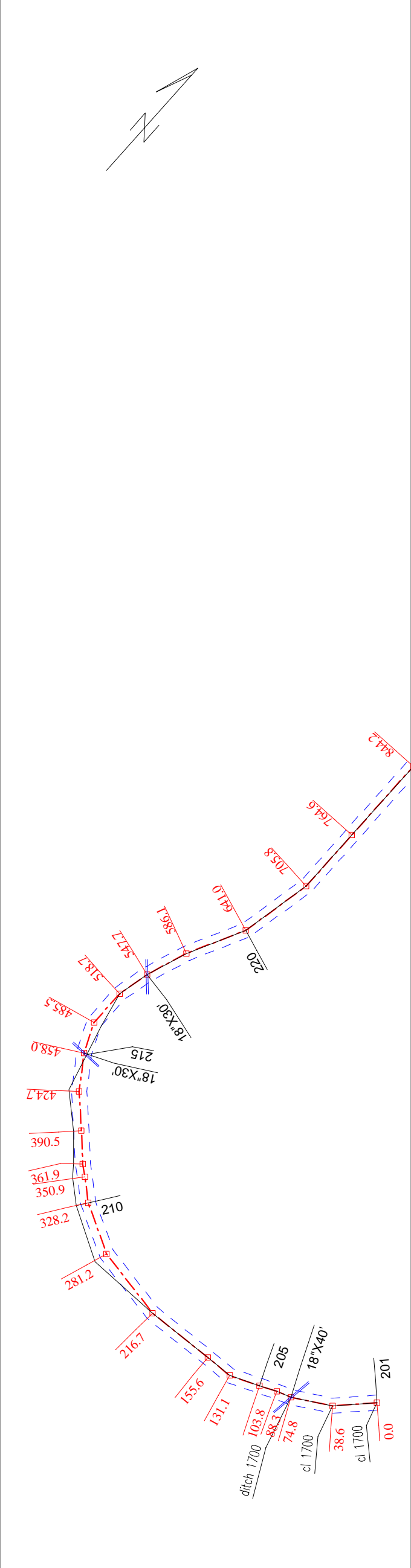
Nomad Timber Sale
1720 RD
Contract #: 30-07765

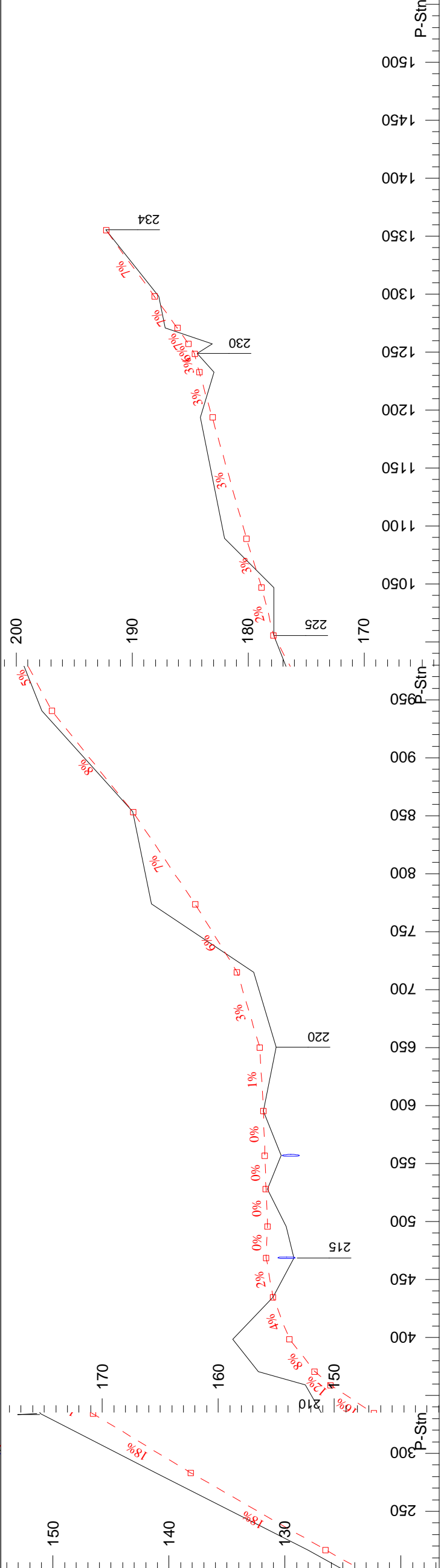
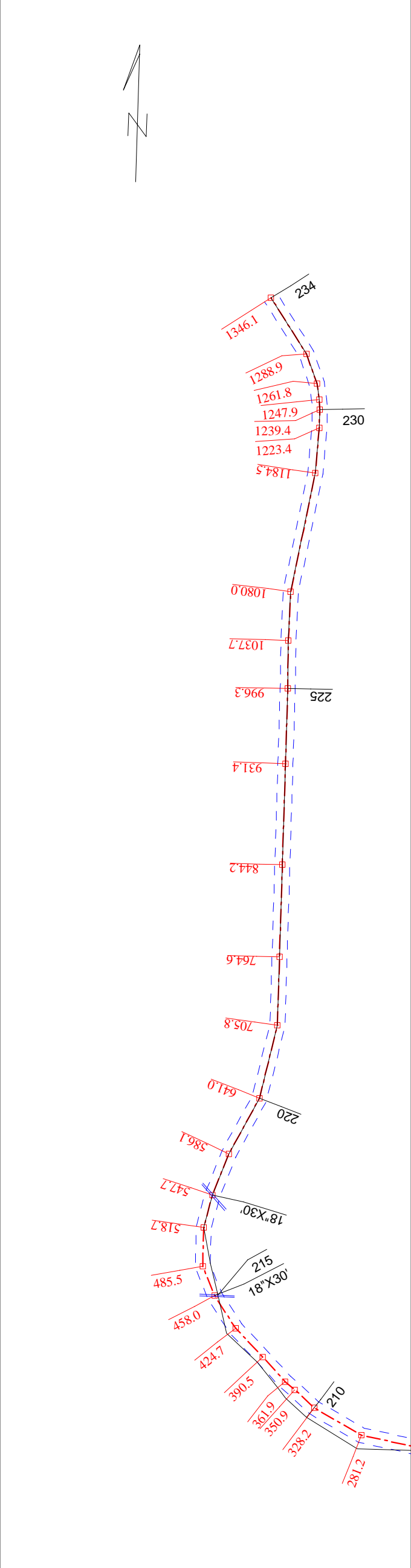
Washington State Department of Natural Resources
South Puget Sound Region

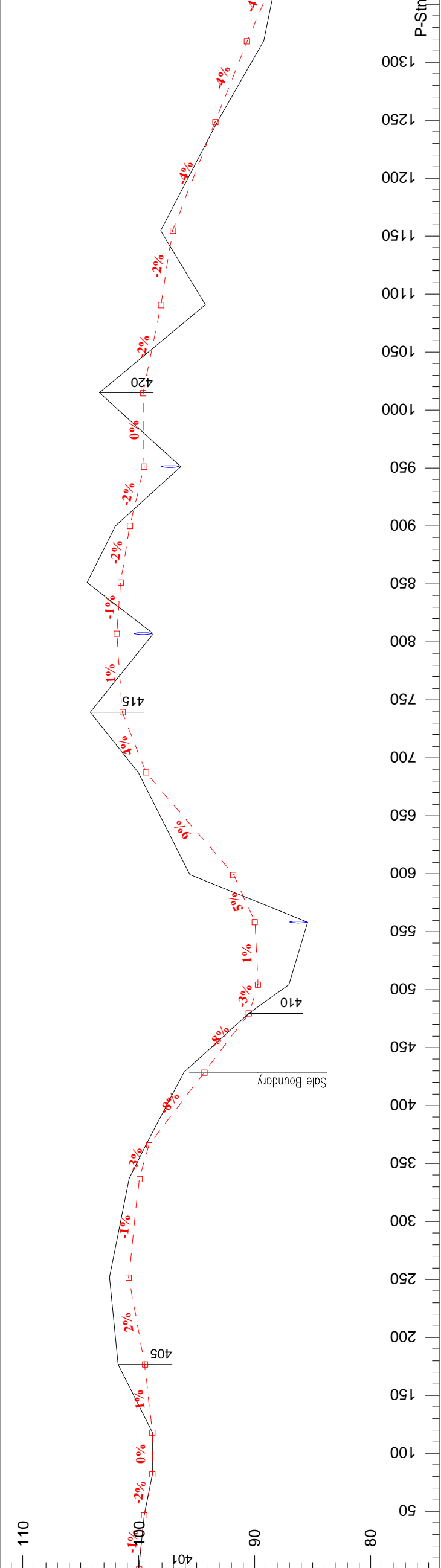
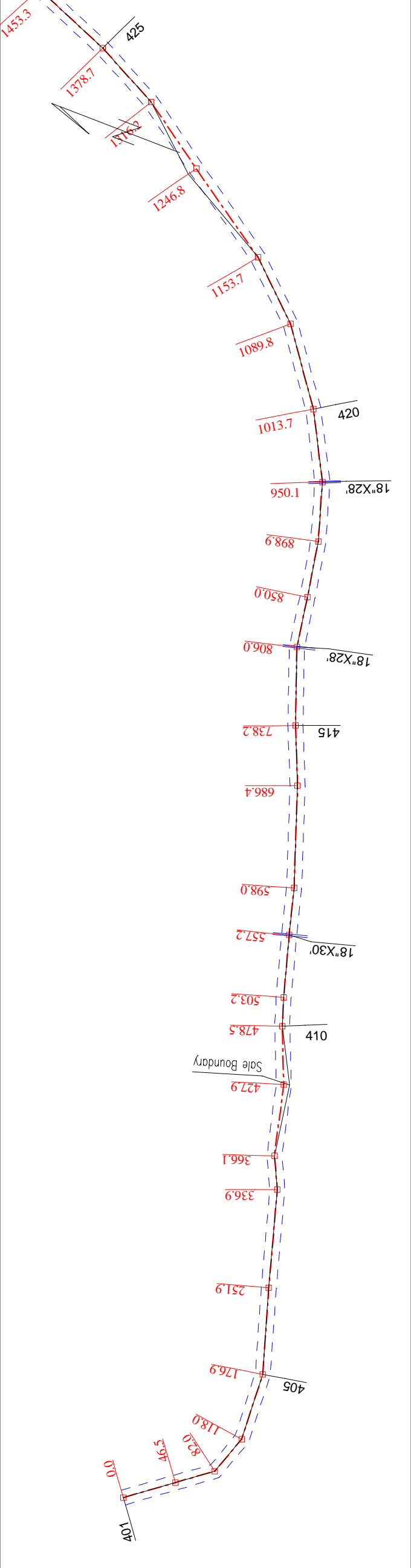
Plan Scale 1:1200
Profile Vert Scale 1:120
Profile Horz Scale 1:1200

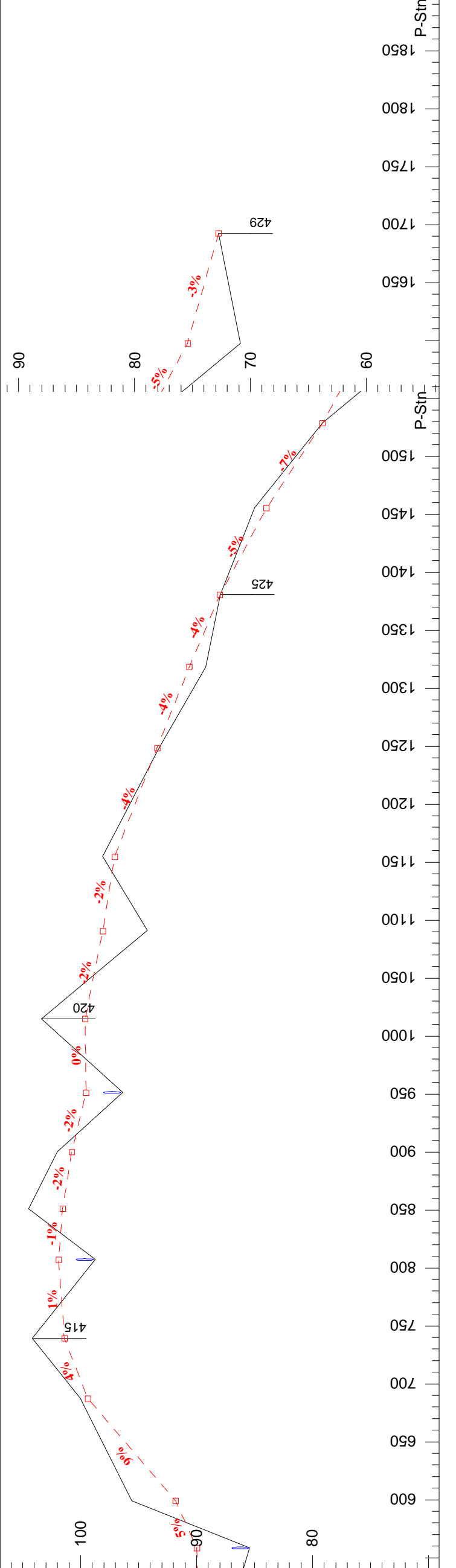
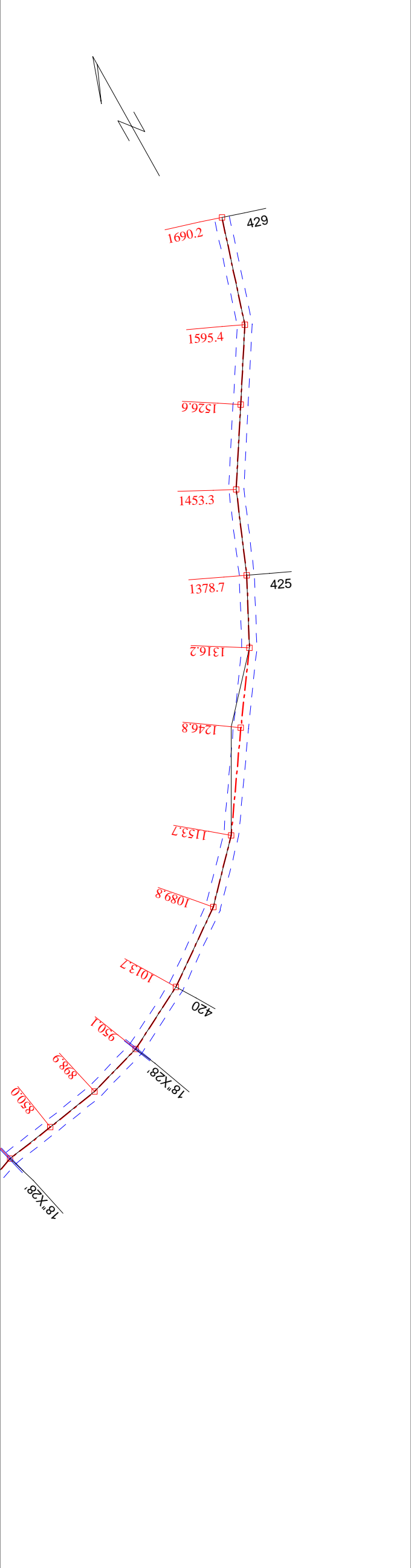
Engineer: B. Heymann





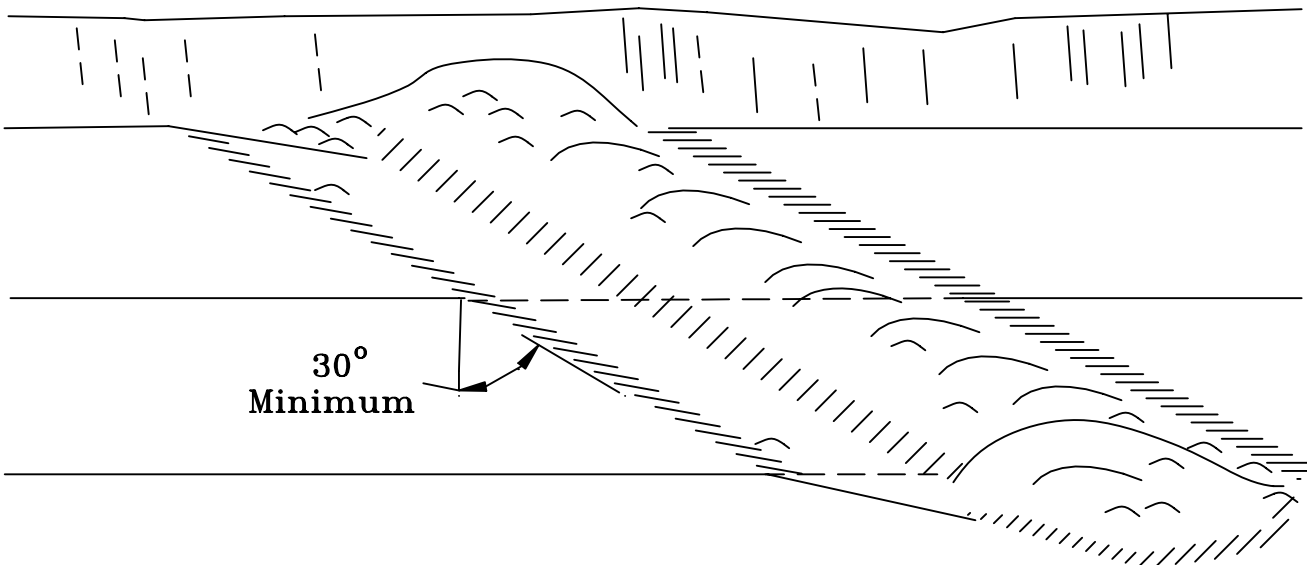




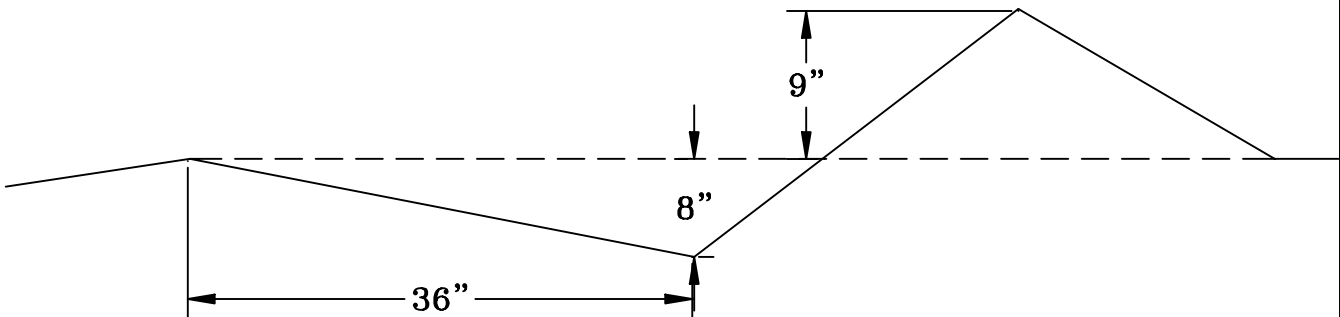


Driveable Water Bar Detail

Cross Ditch



Cross Section at Centerline

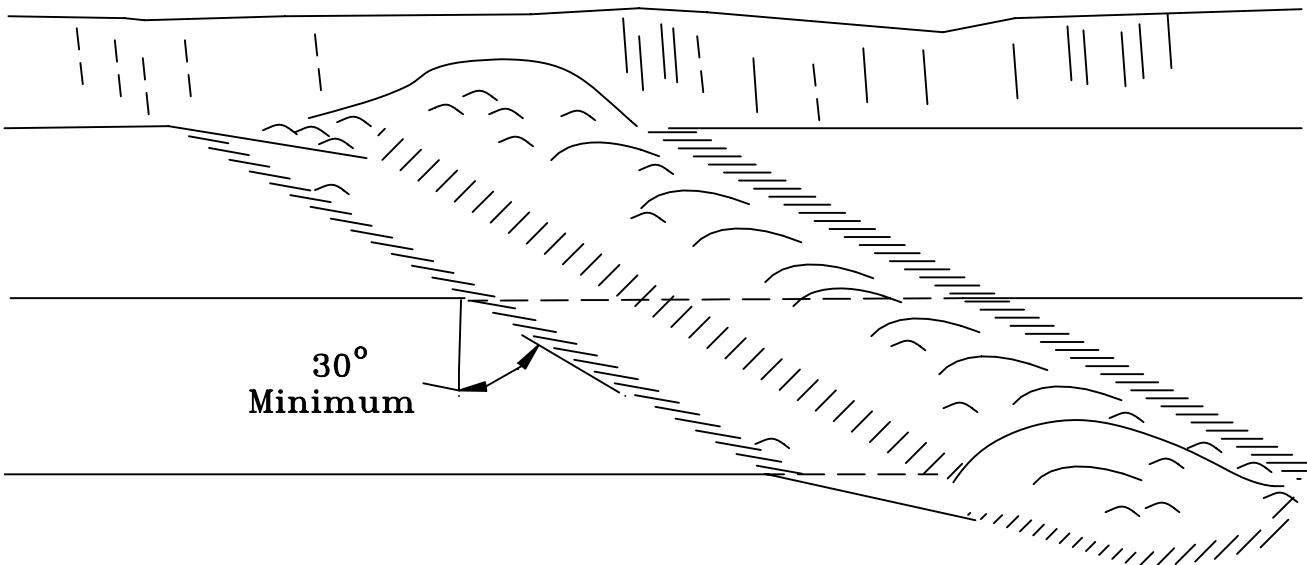


Date:
Scale : None
App#
Drawn by: M.A.D.

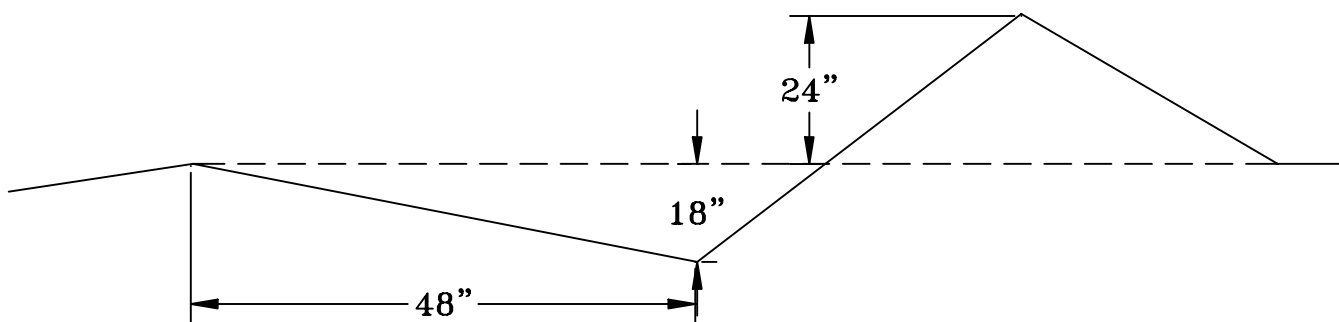
Water Bar Detail	
	WASHINGTON STATE DEPARTMENT OF Natural Resources <small>SPS Region</small>

Non-Driveable Water Bar Detail


Cross Ditch



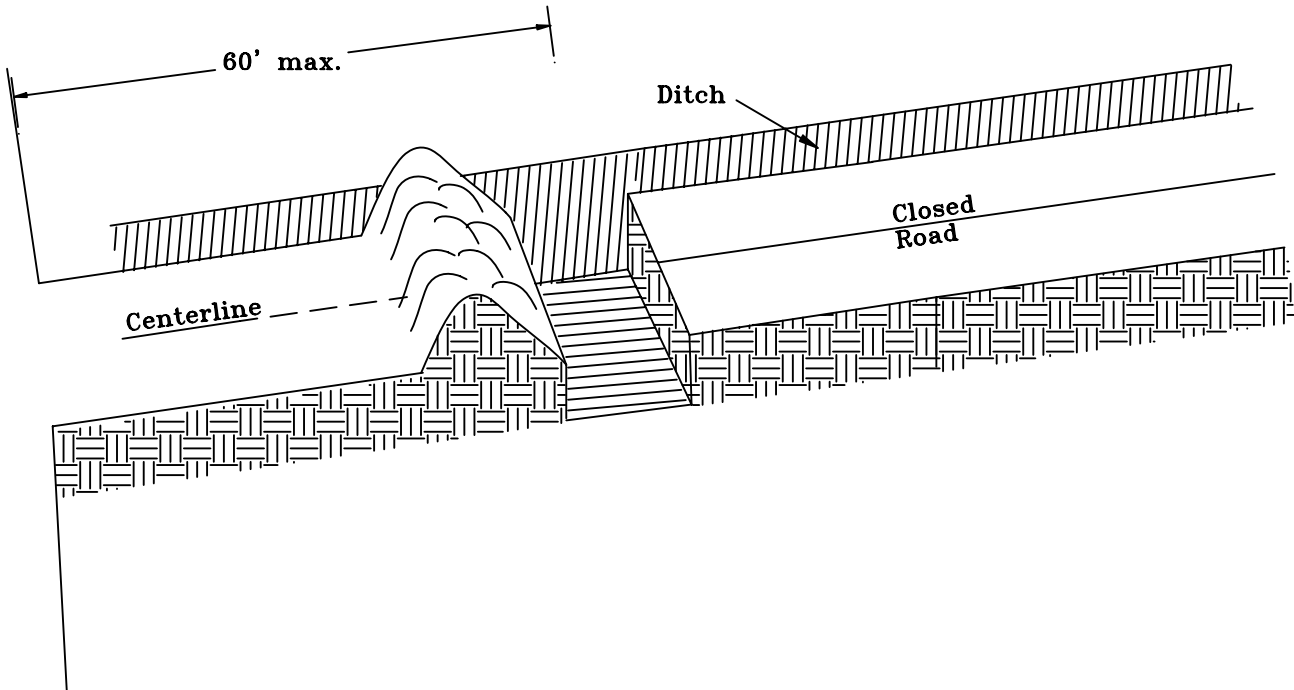
Cross Section at Centerline



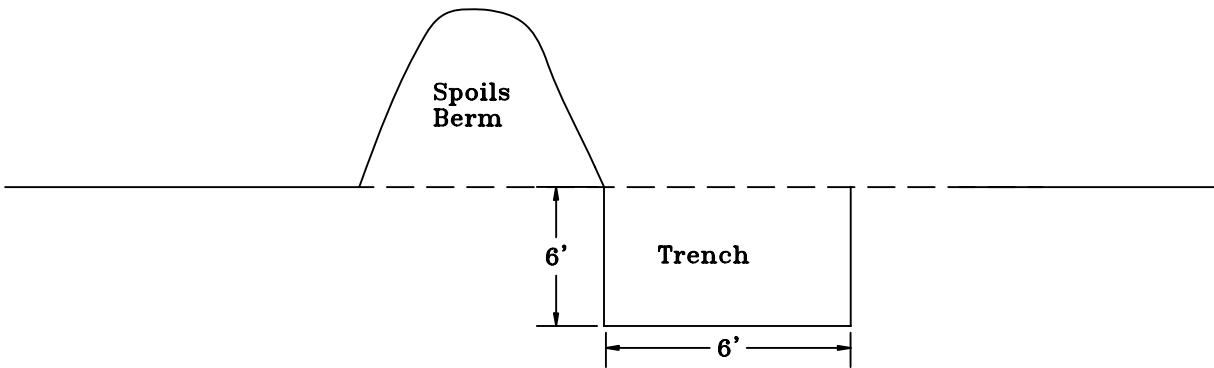
Date:
Scale : None
App#
Drawn by: M.A.D.

Water Bar Detail	
	WASHINGTON STATE DEPARTMENT OF Natural Resources <small>SPS Region</small>

Single Tank Trap Detail



Cross Section at Centerline

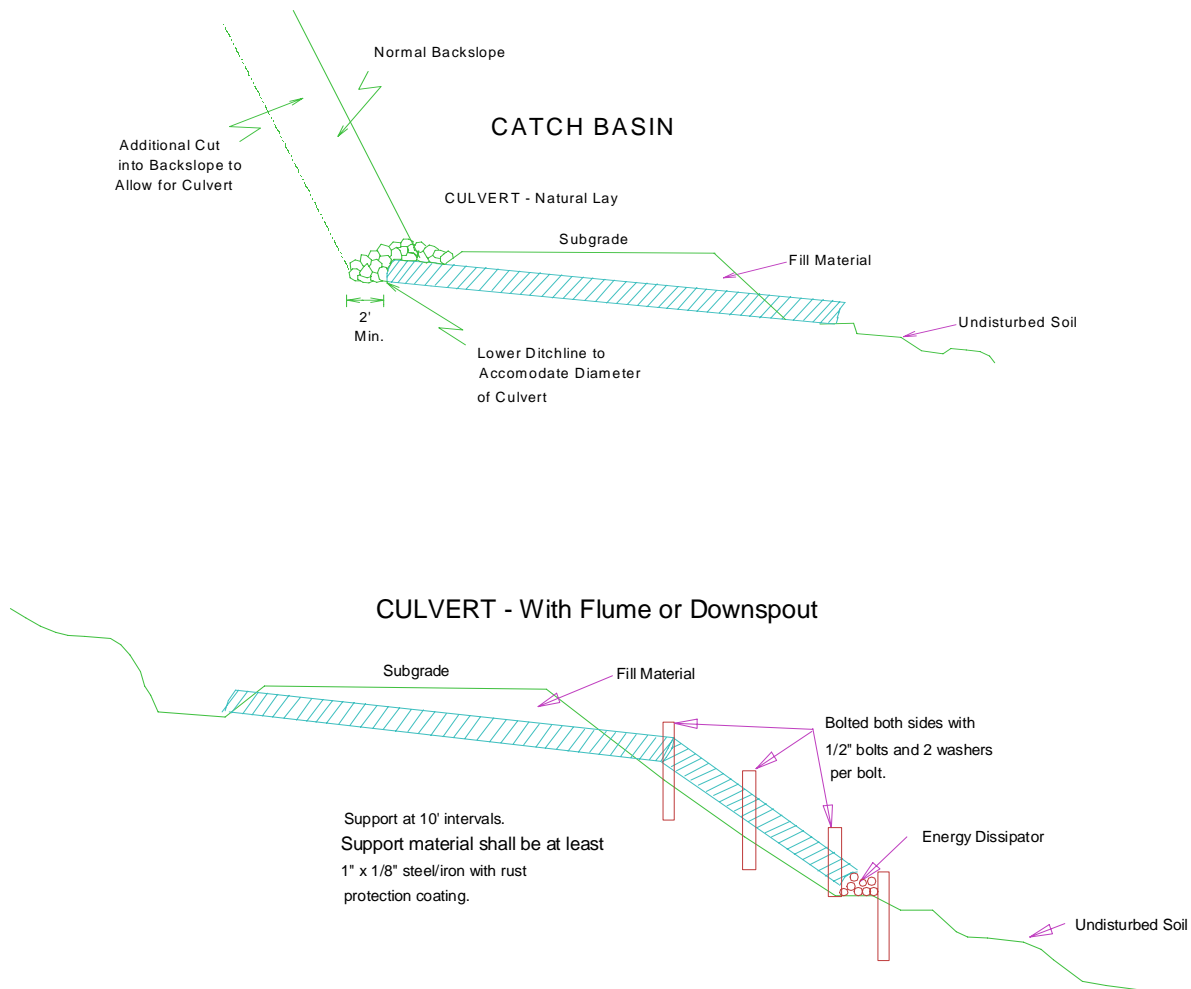


Date:
Scale : None
App#
Drawn by: M.A.D.

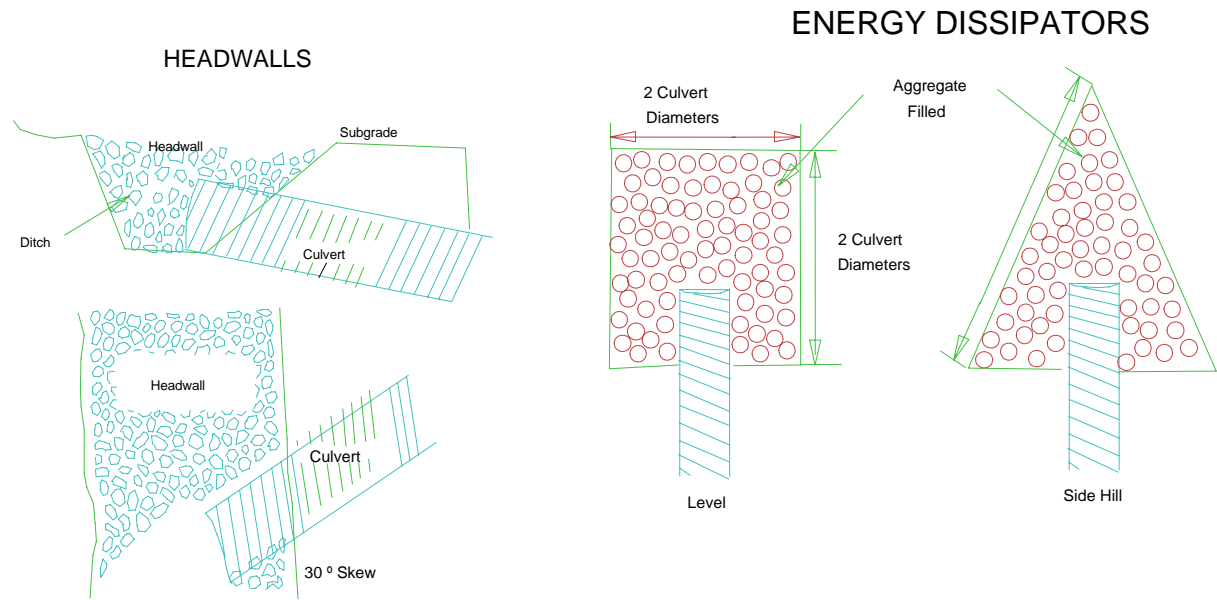
Tank Trap Detail	
	WASHINGTON STATE DEPARTMENT OF Natural Resources <small>SPS Region</small>

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)



Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.

Dissipator Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

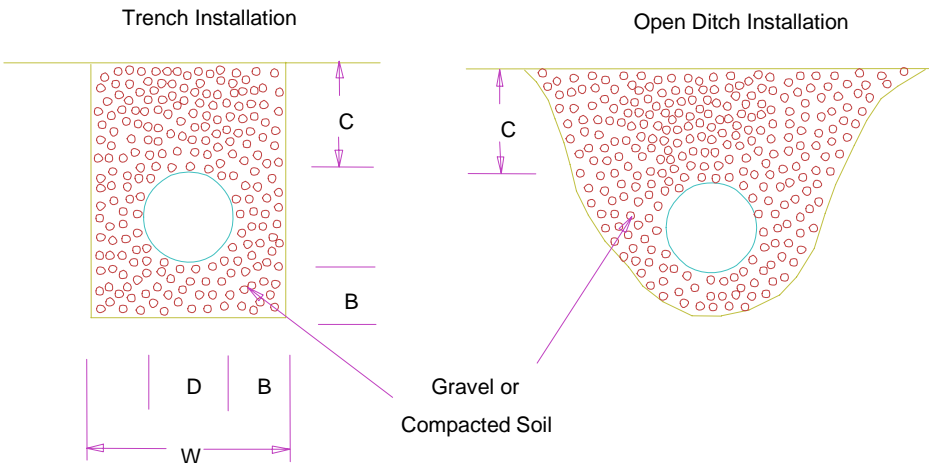
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

- 1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.
- 2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.
- 3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.
- 4. Site conditions and availability of bedding materials often dictate the type of installation method used.
- 5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



MINIMUM DIMENSIONS
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

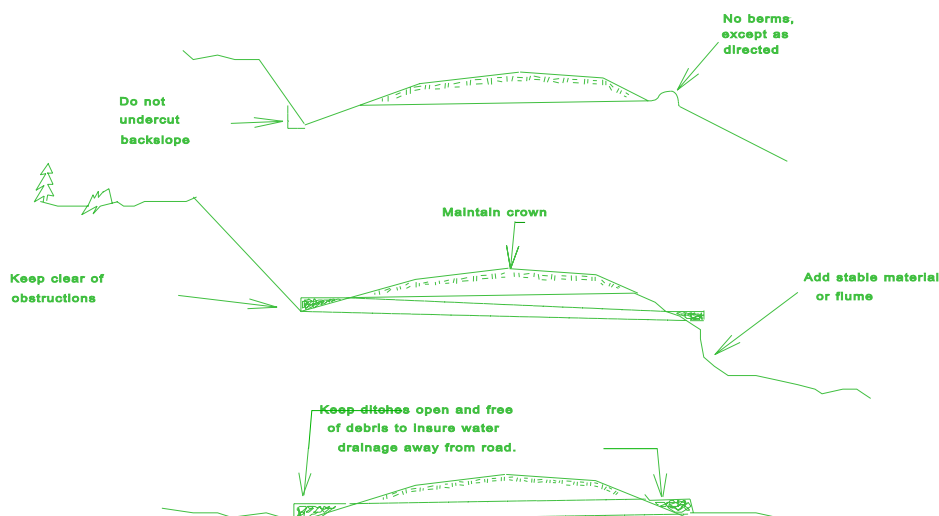
FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION, RECONSTRUCTION and PRE-HAUL MAINTENANCE (Prior to acceptance to the contract or acceptance on a timber sale).
 - A. Cuts and Fills
 1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½ : 1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
 2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
 3. Undesirable slide materials and debris shall not be mixed into the surface material.
 - B. Surface
 1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
 2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
 3. Watering may be required to control dust and to retain fine surface rock.
 4. Desirable surface material shall not be bladed off the roadway.
 5. Replace surface material lost or worn away.
 6. Remove berms except as directed by the State.
 7. Barrel spread soft spots to prevent degradation of geotextile.
 - C. Drainage
 1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
 2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
 3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed.
 4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
 5. Keep silt bearing surface runoff from getting into live streams.
 - D. Structures

Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.
 - E. Termination of Use or End of Season

Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.
 - F. Debris

Remove fallen timber, limbs, and stumps from the slopes or roadway.
2. Existing Roads – Timber Sale, Operator Maintained
 - A. Same as above but not to exceed the condition of the road on the date the contract was signed.
3. A.R.R.F. – Directed maintenance to comply with these specifications.



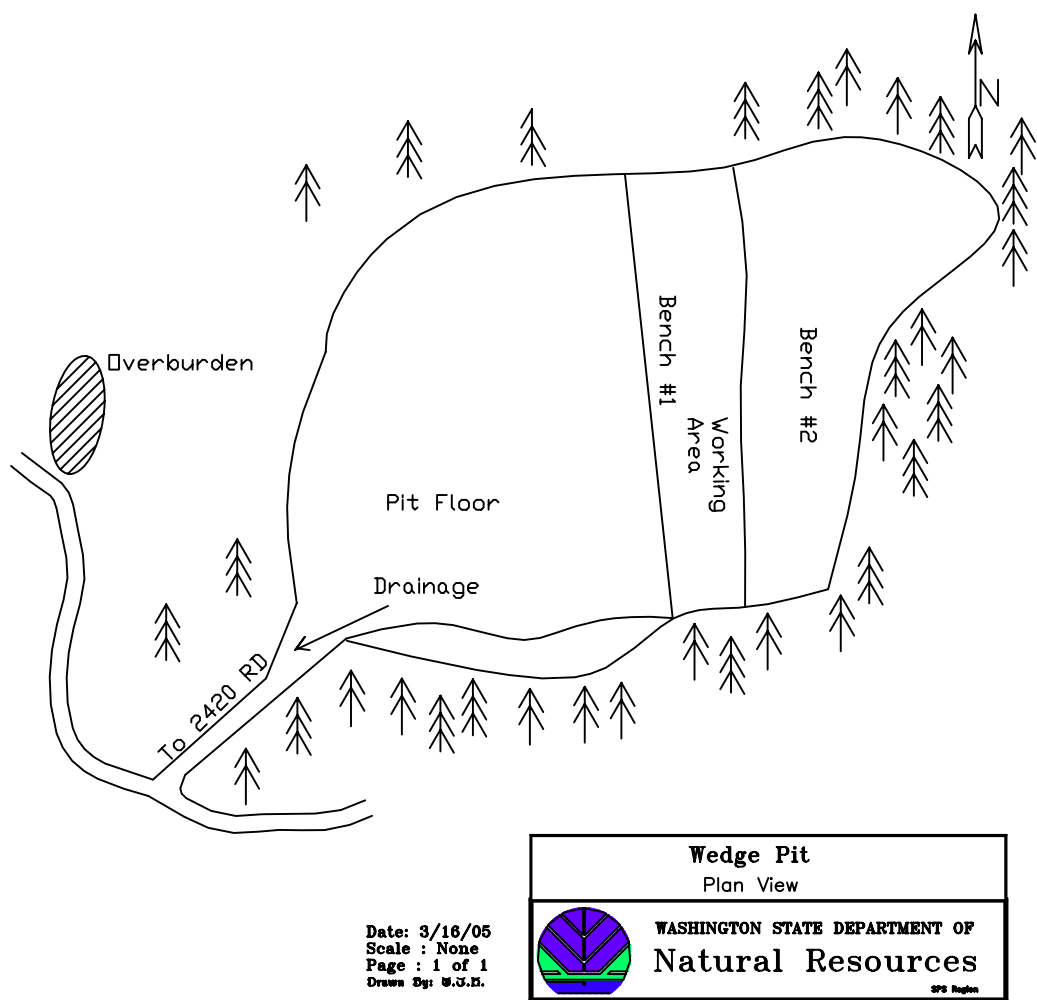
Legal Description: NE ¼ Sec 1 T23N R04W

Rock Pit Name: Wedge Pit

PIT DEVELOPMENT PLAN

- 1. Scatter debris as directed by the Contract Administrator.
- 2. A minimum stripping width of 20 feet must be maintained from all pit faces and at the termination of operations pit shall be left in said condition.
- 3. Pile all reject rock and overburden away from pit working area as directed by the Contract Administrator.
- 4. Pit floor shall be sloped to allow drainage as shown. No ponding will be allowed.
- 5. Maximum face height will be no greater than what can be reached by the excavating equipment.
- 6. At the termination of use the pit face shall have a maximum backslope of 1/4:1.
- 7. Quantity and Quality of ballast pit is not guaranteed by the State.

NE1/4 Section 1 Township 23 North, Range 4 West
Nomad T.S. App # 30-077659 County: Mason



Legal Description: SE¹/₄ SE¹/₄ Sec. 26 T23N R04W

Rock Pit Name: 1710 Pit

PIT DEVELOPMENT PLAN

- 1. Scatter debris as directed by the Contract Administrator.
- 2. A minimum stripping width of 20 feet must be maintained from all pit faces and at the termination of operations pit shall be left in said condition.
- 3. Pile all reject rock and overburden away from pit working area as directed by the Contract Administrator.
- 4. Pit floor shall be sloped to allow drainage as shown. No ponding will be allowed.
- 5. Maximum face height will be no greater than what can be reached by the excavating equipment.
- 6. At the termination of use the pit face shall have a maximum backslope of 1/4: 1.
- 7. Quantity and Quality of ballast pit is not guaranteed by the State.

SE1/4 SE1/4 Section 26 Township 23 North, Range 4 West
Nomad T.S . App # 30-077659 County : Mason

